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BULLETIN 157

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Numbers 43–48

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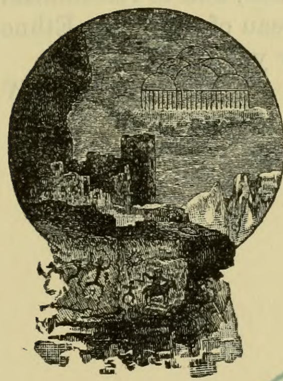

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LETTER OF TRANSMITTAL

Smithsonian Institution,
Bureau of American Ethnology
Washington, D. C., July 23, 1953.

Sir: I have the honor to submit the accompanying manuscripts, entitled "Stone Monuments of the Río Chiquito, Veracruz, Mexico," by Matthew W. Stirling; "The Cerro de las Mesas Offering of Jade and Other Materials," by Philip Drucker; "Archeological Materials from the Vicinity of Mobridge, South Dakota, by Waldo R. Wedel; "The Original Strachey Vocabulary of the Virginia Indian Language," by John P. Harrington; "The Sun Dance of the Northern Ute," by J. A. Jones; and "Some Manifestations of Water in Mesoamerican Art," by Robert L. Rands; and to recommend that they be published as a bulletin of the Bureau of American Ethnology.

Very respectfully yours,

M. W. Stirling, *Director.*

Dr. Leonard Carmichael,
Secretary, Smithsonian Institution.

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SMITHSONIAN INSTITUTION
Bureau of American Ethnology
Bulletin 157

Anthropological Papers, No. 43

Stone Monuments of the Río Chiquito, Veracruz, Mexico

By MATTHEW W. STIRLING

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STONE MONUMENTS OF THE RÍO CHIQUITO, VERACRUZ, MEXICO

By Matthew W. Stirling

INTRODUCTION

Some 50 miles inland from its mouth in the Bay of Campeche, the Coatzacoalcos River forks into two branches which rejoin after flowing their separate ways for about 12 miles, forming the Island of Tacamichapa in southern Veracruz (fig. 1). This island, about 12 miles long and 8 miles across, is famous as the birthplace of Malinche, mistress of Cortez and interpreter for his expedition. The west arm of the river at this point, being the smaller, is known as the Río Chiquito. About 7 miles below the upper fork the Tatagapa River enters the Chiquito from the west. In the area between the Tatagapa and the Chiquito are a number of important archeological sites. In general the land here is low and level. The alluvial plains of the river are wide and the soil is deep and rich. The more elevated portions are covered with dense jungle, but there are wide stretches of savannah, covered with a heavy growth of tall zacate, and some areas of open swamp. The ground being level, the streams and sloughs which drain it are deep and sluggish.

Two or three miles above the mouth of the Tatagapa River, an isolated elevated ridge extends from the left bank of the Chiquito in a southwesterly direction. Although it is not continuous, this ridge terminates finally in the Cerro Encantado, the most conspicuous landmark in the region, some 10 miles distant. During the year 1936, a few natives built some houses at the east end of the ridge, on the banks of the Río Chiquito, and made clearings for their milpas in the virgin jungle which covered the elevated land. The community grew, and as the clearings exposed a number of large mounds on the site some historically minded settler named the new village Tenochtitlán.

Gradually the clearings extended southward along the ridge until in 1944, at a point about 2½ miles south of Tenochtitlán, another archeological site was encountered in an unpopulated district known as the Terrenos de San Lorenzo.

Hearing a report of stone monuments at this place prompted me to

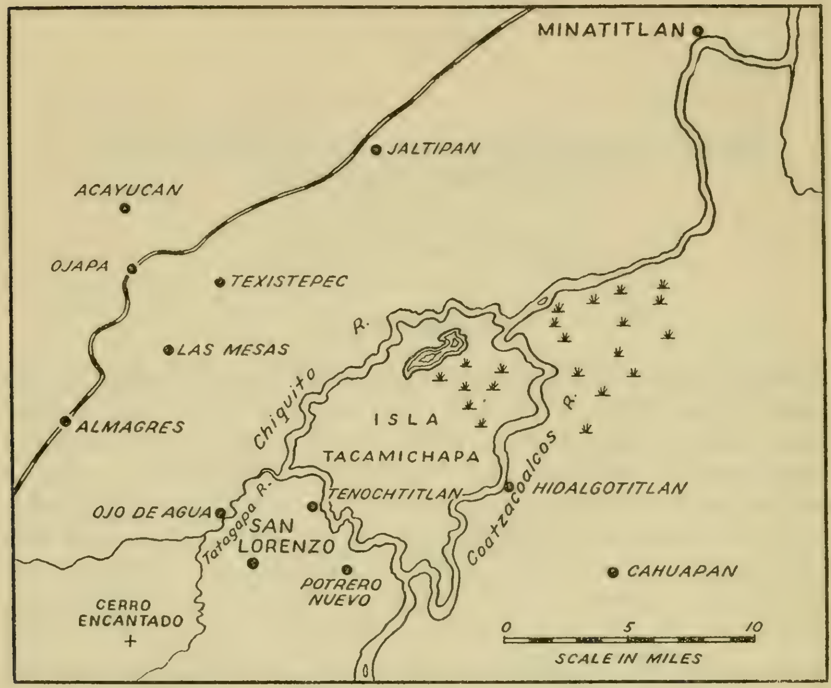
MINATITLAN
JALTIPAN
ACAYUCAN
OJAPA
TEXISTEPEC
LAS MESAS
Chiquito R.
ALMAGRES
ISLA TACAMICHAPA
TENOCHTITLAN
HIDALGOTITLAN
Coatzacoalcos R.
OJO DE AGUA
Tatagapa R.
SAN LORENZO
POTRERO NUEVO
CAHUAPAN
CERRO ENCANTADO
0 5 10
SCALE IN MILES

FIGURE 1.—Island of Tacamichapa and vicinity, southern Veracruz, Mexico.

visit the site in 1945, when preliminary investigations were made. When I returned in 1946 a full season of excavating was carried on, with supplementary work at the neighboring sites of Tenochtitlán and Potrero Nuevo. During both the 1945 and 1946 seasons I was aided in the field by my wife, Marion Stirling. In 1946 I was assisted by Philip Drucker who was concerned primarily with the stratigraphic work conducted at the three sites. Richard H. Stewart, of the National Geographic Society, also assisted in the work and was the official photographer of the expedition. I should like to also express my appreciation to Juan Del Alto and Marguerite Bravo, of Coatzacoalcos, who first brought to our attention the existence of the San Lorenzo site. The entire project was part of the National Geographic Society–Smithsonian Institution archeological program, the primary objective of which has been the study of the La Venta or Olmec culture. The work, as always, was made pleasant by the whole-hearted cooperation of the National Institute of Anthropology and History of the Mexican Government.

A brief account of this work has been published elsewhere (Stirling, 1947). The present report is to place on record the stone sculpture found during the work.

RÍO CHIQUITO

The modern village of Tenochtitlán is situated on and between two parallel ridges running in a north-south direction, and terminating at the Río Chiquito. On the lower ridge nearest the river are a number of small mounds, but the principal earthworks are on the ridge 400 yards to the west. At the north end of this elevation there is a group of four big mounds, the largest being about 60 feet high. Its apparent height is much greater since the base merges into the slope of the natural elevation on which it is built. This mound forms the north end of a long rectangular court with parallel flanking mounds on the east and west sides and another mound at the south end. South of this group are more mounds, culminating in a large one at the south end of the elevation. On the floor of the court are two small low mounds, one at either end. From the high mounds a very fine view is had over the extensive plain below. Ten miles to the south the peak of the Cerro Encantado can be seen standing in isolated grandeur above the level plain. Two or three miles to the south are the heights of San Lorenzo, really a continuation of the same low ridge on which Tenochtitlán is situated. Although the village in part is built directly on a portion of the archeological site, I have called the latter Río Chiquito since to name it for the village would result in endless confusion because of the famous site of Tenochtitlán in the Valley of Mexico. Just below the mound group there are exposed in the river bank two sherd levels, separated by several feet of sterile alluvium. The lowermost of these is 20 feet below the present surface of the ground and about at the level of the river surface at low water. The character of the material in the two occupation levels is apparently different. It is probable that we will be able to assign the greater number of the stone monuments to the period represented by the lower level.

In the course of excavating a stratigraphic trench in the river bank at this place, we encountered in the lower level two large granite cylindrical columns. Each was 2 feet in diameter; one was 14 feet and the other 13 feet in length (pl. 4). These are similar both in material and dimensions to the stone column on the south end of the long mound at La Venta. It is probable that this area lying west of the river bank was the principal occupation site belonging to the mound group ceremonial center.

Stone monuments were neither of large size nor abundant at the Chiquito site, although it is not improbable that many may be deeply buried as were the stone columns. Being small, none were in situ at the time of our visit, but we were assured that those now in the village were all found in the immediate vicinity of the mound group.

DESCRIPTION OF MONUMENTS

MONUMENT 1

Monument 1 was lying in the village of Tenochtitlán when we first saw it. According to the natives it was found in the vicinity of the nearby group of large mounds. The sculpture apparently represents an anthropomorphic jaguar seated on a human figure lying on the back cross-legged. Presumably the lower figure is that of a woman, and the act of copulation is depicted. This identification would be much less certain were it not for the fact that we later found a much more realistically carved monument (Monument 3, Potrero Nuevo) representing the same subject. The upper figure of Monument 1 is carved in the full round and considerably more care is used in forming it than is the case with the lower figure, which is flattened and somewhat angular. The "jaguar" is shown with a long trailing ornament hanging down the lower part of the back, and what appears to be a headdress hanging over the back of the neck. On the chest is a circular gorget suspended from the neck. The heads of both figures are missing as are the forearms of the upper figure. The sculpture proper is mounted on a low flat base (pl. 2).

MONUMENT 2

Monument 2 is a small figure about 3 feet in length of a snarling jaguar lying in a crouching position, with the head turned to the side and the left foreleg raised alongside the head. The treatment is realistic and the general effect rather pleasing.

This stone was found in clearing near the mound group, and it had been brought into the village at the time of our arrival (pl. 3, *a*, *c*).

MISCELLANEOUS STONE

Among the items encountered in clearing for the village were two small tetrapod stone vessels. They are more or less rectangular in form and have shallow rectangular depressions on top. On the front of each is carved a human face, and the two front supports are in the form of bent elbows, with the forearms extending upward on each side of the face (pl. 3, *b*).

Lying by the trail crossing the dip in the ridge south of the Río Chiquito group is a human torso in stone. It appears to have been a rather slender statue of a standing figure. The two stone columns found in the river bank below the village have already been described.

SAN LORENZO

Riding south along the ridge from Tenochtitlán, one notes that the trail dips low for more than a mile, when it again rises steeply to the heights of San Lorenzo where the archeological site is located. The series of ridges comprising the heights is really a flat-topped mesa of gravelly soil, cut through here and there by steep ravines. Some of this erosion may have taken place since the aboriginal occupation.

The stone monuments are scattered widely over the site, which extends for approximately one-half mile. Unlike La Venta and Tres Zapotes where the majority of the monuments were standing in situ, the San Lorenzo monuments appear all to have been intentionally overthrown and many of them cast into the ravines. Paradoxically, however, most of them seem not to have been mutilated and are in better condition than the monuments at other Olmec sites. The displacing of the stones was apparently done by the later aboriginal occupants of the site, as represented by the upper occupation level. Since the two levels are separated by a considerable time interval, it does not seem likely that a conquest took place. The later inhabitants evidently moved into an abandoned site and for some reason felt called upon to dispose of the monuments.

The mound structures at San Lorenzo are quite unimpressive. The principal mound is conical in shape, although it may originally have been a pyramid. It is about 25 feet in height and stands at the south end of a rectangular plaza which is enclosed by earthen embankments. Trenches in the plaza revealed an occupational deposit of about 4 feet. Below this are three or four floor levels close together. Sherds were not very abundant although several caches of whole pots were found. Figurines of the solid variety were present, but rare. The pottery is buff, black, or gray, with occasional incised decoration. A few other small mounds are erected near this central plaza, but they are without apparent regularity or orientation. Northeast of the central plaza, toward the edge of the ridge, the cultural deposit is much thicker, reaching a depth of 15 feet or more. In this section sherds are much more abundant than in the plaza itself. Cross-section trenches were made in all the principal mounds and in the occupied area, and the site itself was mapped.

The widely scattered stone monuments are striking and fairly abundant, seemingly out of keeping with the general inconspicuous nature of the mounds.

DESCRIPTION OF MONUMENTS

MONUMENT 1

Monument 1 is a head, and, because of its large size, good state of preservation, and general artistic merit, is one of the most impressive of all of the San Lorenzo monuments. Over 9 feet in height, it is wide and thick and the heaviest of all the Colossal Heads. When discovered it was lying on its back, head down on the slope of a small but steep arroyo about 300 yards southeast of the principal mound. The only damage it had suffered was the scaling off of a section above the right eye. The pieces were lying on the ground at the base of the head, and we later put them back in place with cement. The back is plain except for two pendent rectangles evidently representing the hair hanging down. The features are carved in a manner that gives the impression of full realism. The lips are outlined with a narrow raised ridge which gives the mouth a very lifelike appearance. The headdress is simple, consisting of a broad median crest with a circular element over the forehead which terminates in four semicircular scallops where it meets the groove which passes around the front of the head. This groove, which is very similar to the one on the Colossal Head of Tres Zapotes (Stirling, 1943), is cut deep with right-angled edges, and looks as though it were made for some sort of inset. Although the upper lip is short, it is longer than in the other Colossal Heads.

Another respect in which Monument 1 resembles the Tres Zapotes head is in the treatment of the ears and the style of ear ornament worn. This is a rectangular object placed horizontally through the pierced lobe of the ear.

The eyelids are shown as narrow curving bands, and the iris is indicated by a slightly raised circle on the eyeball.

The head is approximately 9 feet 4 inches high and it is 6 feet 6 inches wide. The mouth measures 37 inches across, the eye 21 inches, and the nose 25 inches (pls. 5, 6).

MONUMENT 2

Monument 2 was the first of the monuments at San Lorenzo to be found, and led to the discovery of the site. It lay completely buried under the trail which led southward along the heights from Tenochtitlán. The trail exposed part of the stone, and a curious native cleared away part of the mud covering it, exposing one eye. Upon arriving at the site, we excavated it, revealing a head almost 9 feet in height. The head has suffered very little damage, although erosion has slightly obscured the fine carving of the features. It is the only head which has considerable decoration on the back, most of the rear flat surface being covered with small-element designs which are perfectly preserved as a result of the head having lain on its back.

The headdress proper is rather plain, the principal decoration being three large ovals in low relief with incised designs over the forehead. The lips are somewhat less full than usual, and are parted, revealing a row of upper teeth. Although almost as high and as wide as Monument 1, the stone is not as thick, and so viewed in profile it is somewhat flattened.

Like Monument 3 it has had a number of hemispherical depressions ground into it. A curious depression is carved in the headband above each ear. A tassellike appendage hangs from each ear, and over this is carved a large circular ornament. Monument 2 is 8 feet 10 inches high and 5 feet 6 inches wide (pl. 7).

MONUMENT 3

Monument 3 is a head lying on the bottom of a deep and wild ravine about a half-mile in a direct line southwest of the principal mound. To reach it one crosses two other deep ravines from the trail leading south along the main ridge. It is located not more than 50 yards above the point where the ravine terminates in the swampy plain. Excavation was tedious because the head lies in a spring, and it was difficult to keep the excavation free from water. When discovered, the monument lay upside down.

The head is strongly carved and has a certain portrait quality. A slight frown is indicated by a groove at the base of the nose. The irises are indicated by circles as in a number of the other heads. The only damage it has suffered is the loss of most of the lower lip, but it is obvious that no teeth were shown. Scattered over the forehead and the top of the head or headdress are a considerable number of rather deep circular depressions, each of which has another small depression at its bottom and center. These are uniform in size and typically occur in pairs. What their purpose might be it is difficult to conjecture unless they were used to attach some extraneous decoration. They appear to have been made after the headdress design was completed. Monuments 2 and 3 at La Venta (Stirling, 1943, pls. 42, *b*; 43) have a series of similar depressions on them, as does Monument 2 at San Lorenzo.

The design on the headdress is geometric in character and rather elaborate. It consists of a series of four horizontal bands across the forehead, embellished with diagonal grooved lines. These geometric designs are carried on to cover most of the headdress. The rectangular elements in front of the ears are prolonged by the addition of a square section slightly smaller in diameter, to which is added a wedge-shaped pendant which extends straight down to the chin level. The ears are not shown (pl. 8).

MONUMENT 4

Monument 4 is a head found lying on its side almost completely buried in a section of dense jungle about 600 yards northwest of the main mound. It is in a perfect state of preservation, not a flaw marring it. In some ways it is the most individualistic in appearance of any of the heads.

The face is relatively narrow and the headgear high in proportion to the face. The eyes are done with fine realism, the lids being somewhat narrowed and slanting downward to the outer corners. The circles representing the irises are placed toward the inner part of the eyeballs, but this does not create a cross-eyed effect. The headdress is unusual, a series of seven vertical elements terminating in three circles, extends above the right eye, while four horizontal elements, each incised diagonally are placed above the left eye. The rectangular elements in front of the ears extend downward to the level of the base of the chin, and each has three evenly spaced ribbonlike elements extending backward along the side of the head.

Each ear lobe is decorated with a circular disk from which hangs a pendant which curves backward. The face is completely free from surface erosion and has a remarkable skinlike texture. The expression is stern but calm. In profile the features are rather flat.

Monument 4 is 5 feet 4 inches in height (pls. 9, 10, 11, *a*).

MONUMENT 5

In a ravine south of the main mound and close to the laguna was Monument 5, another buried head lying face down in the ravine bed. On turning it right side up it proved to be one of the finest of all the Colossal Heads. It is carved more nearly in true proportion than any of the other examples, the profile being in full relief instead of somewhat flattened. Viewed from any angle it is a splendid work of art. The majority of the heads were intended to be viewed full face, and suffer somewhat in effectiveness when seen from the side. Monument 5 is in a virtually perfect state of preservation, the only defect being a small chip in the upper lip.

The headdress is more elaborate than on any of the other heads. Two jaguar paws, each displaying three toes with claws, are draped over the headband, one above each eye. The spaces between are decorated with a series of small-element designs consisting of circles and parallel lines. The usual rectangular element hangs from the headband in front of each ear. The ears have a circular disk or ornament on each lobe from which hangs a comma-shaped pendant curving backward. The treatment of the ears and the ear ornaments is the same as on Monument 4 and on Monument 2 at La Venta (Stirling, 1943, pl. 43). The back has the usual flat surface down the center and is plain except for a single groove carved horizontally across it. The lips are full and give the appearance of being slightly parted but the teeth do not show. The nose is standard in treatment but as has been mentioned, stands out from the other features in full relief. A notch in the headband over the bridge of the nose and modified supraorbital ridges give the impression of a slight frown.

Monument 5 is 6 feet 4 inches high (pls. 12, 13).

MONUMENT 6

We found Monument 6 about a mile south of the central mound on the flat land below the heights. This head had apparently been carried there in ancient times. It had been broken off in such a way as to suggest that the body may have been in a recumbent position or that the complete monument may have had the form of Monument G at Tres Zapotes (Stirling, 1943, pl. 8, *b*). The head in its present state is 3 feet 4 inches high. The carving is Olmec in character and the head is in good condition. It is represented as wearing a peculiar flat headdress which entirely surrounds the crown in the form of a wide band (pl. 14).

The treatment of the features is somewhat different from the Colossal Heads. The eyes have a puffy appearance and the lids are shown as half-closed. In this respect they resemble the eyes on the Atlantean figures of Monument 2, Potrero Nuevo (pl. 23).

MONUMENT 7

At the edge of a ravine west of the central mound was the figure of a crouching jaguar or mountain lion. It is a very nice carving, realistic in treatment but with the body strangely elongated. The long tail extends along the right side of the body, passing under the right hind leg.

Except for the missing head, the figure is complete and undamaged. Our workmen referred to this monument as "El Leon" and it does in fact resemble a mountain lion rather than a jaguar (pl. 17, *a*).

MONUMENT 8

Near "El Leon" at the edge of the ravine was a large rectangular stone, perfectly flat and well smoothed on the back. The flat surface of the face is decorated by six symmetrically placed celt-shaped depressions and a raised border around the edge. One end has been broken off. The stone in its present condition is 64 inches long, 47 inches wide, and 11 inches thick (pl. 15, *a*).

MONUMENT 9

This interesting object (Monument 9) was found on a narrow projecting point overlooking a steep ravine west of the central mound. It appears to have been a stone fount in the form of a swimming duck, with the two webbed feet projecting in front under the breast. Wings are carved in high relief on the sides. On the center of the breast carved in relief is a quacking duck with open beak and flapping wings. On each side of this figure is a glyph which may represent rain or water. It consists of a wavy band from which hang three long and two short elements. A third glyph exactly similar but somewhat larger is shown on the rear. The top is hollowed into a basin but the upward projecting sides are broken off all around. On the right side a U-shaped opening has been cut through the wing, and a round hole in the bottom may have served as a water drain. The base is smooth and perfectly flat. The stone in its present condition is 37 inches in diameter and 16 inches high (pls. 17, *b*; 18).

MONUMENT 10

In the bottom of a small ravine, the figure of a jaguar (Monument 10) was found inverted and buried, only the base showing before we excavated it. Just above it, on the south side of the same ravine, were scattered the curious trough-shaped stones described later.

The figure represents the classical Olmec anthropomorphic jaguar, shown in a seated position. It is undamaged except for the lower extremities. The head is rectanguloid in shape with notched forehead, a horizontal "step" in the back of the head, reminiscent of the famous Kunz ax, a broad forehead band, narrow rectanguloid eyes with drooping outer corners, and the typical Olmec nose and "tiger mouth." The ears are long and narrow. The arms are held across the chest, each hand grasping a curious cestuslike object. This device is shown elsewhere in Olmec sculpture, one of the best examples being on a jade figurine in the collections of the Cleveland Museum of Art. In the area on the chest between these is a glyph terminating in three triangles on the upper part.

Monument 10 is 47 inches high and 33 inches across (pl. 15, *b*).

MONUMENT 11

In the bottom of one of the heavily wooded ravines west of the central mound, we excavated an inverted and almost competely buried seated figure, possibly representing a woman (Monument 11). A cylindrical bar is held across the lap. The right hand is shown supporting the bar from underneath, palm up, while the left hand grasps the bar from above, palm down. The right end of the bar has been broken off, so it is impossible to tell if it terminated plainly as does the left end. It does not appear to represent a grinding stone.

The figure is very nicely carved, but unfortunately the head is missing (pl. 16, *a*).

MONUMENT 12

Monument 12 is one of the two carved stones lying on the ground at the east base of the central mound. It represents a seated woman holding in her arms an infant which appears to have a human body and probably a jaguar head. The head is missing from the figure of the woman. It now stands 23 inches high and is 27 inches wide (pl. 16, *b*).

MONUMENT 13

Monument 13, the second monument at the east base of the central mound, is a basalt sphere 115 inches in circumference (pl. 11, *b*).

Two similar spheres were found at Cerro de las Mesas (Stirling, 1943, pl. 30, *d*), and one is reminded of the more spectacular examples from southwestern Costa Rica.

MONUMENT 14

Southwest of the central mound there is a circular laguna or pond about 30 yards in diameter. Only during unusually dry years does it become dry at the end of the dry season. At the eastern edge of this pond, and under water most of the year, is a large stone altar (Monument 14; pl. 21, *b*). This monument is remarkably similar to Altar 4, La Venta (Stirling, 1943, pl. 37), the dimensions of which it closely approximates, although the workmanship in general is inferior. Also, the basalt from which it is carved appears to be identical with that from which Altar 4 was made, and is probably from the same quarry. When found, Monument 14 was lying on its back, face up, and the front surface had suffered considerable erosion. What remains of the carvings on the ends is well preserved. In form it is the conventional La Venta table-top altar. The front projection of the table top is less than on Altar 4 of La Venta, and the arched niche in front is less deeply carved. The seated figure emerging from the niche is almost in the full round. This figure is represented as holding what may be the ends of ropes passing around the base of the altar. On the top is a raised rectangle as on Monument 2, Potrero Nuevo. On each end of Monument 14, under the projecting table top, is a carving in low relief (pl. 22). On the south end is a single seated figure, wearing a wide-brimmed headdress surmounted by the clutching talon of a bird of prey. A number of droplike ornaments are pendent from the brim of the headdress. From the ear lobe hangs a curved ornament. Around the neck is a double string of beads from which hangs a star-shaped gorget with a circle in the center. Each upper arm is encircled by an arm band, and a broad belt is worn about the waist. The features in profile are typically "Olmec" in character. The right arm is extended and is lightly grasped by the left hand. The stone is broken away at the right hand, but I suspect that when complete it was shown with a rope attached to the wrist as in the case of the figure on the south end of Altar 4, La Venta. The carving is in good condition, and considerable skill was exhibited in its execution. An interesting effect of perspective is achieved in the handling of the shoulders. Directly in front of this figure are the remains of two deeply carved rectangular niches, no doubt carved subsequent to the original sculpture.

The north end, as with Altar 4 at La Venta, has only part of the decoration remaining, the major part of the surface having been carefully chipped away to create a new surface an inch deeper, in the form of an arch. In this surface, six deep rectangular niches of various size were carved. All that remains of the carving on the original surface is the upper part of the head of a man, including the eye and nose and a rather elaborate headdress with what appear to be curving feathers projecting from it. This carving had been executed with as much skill as the more complete figure remaining on the opposite end.

Monument 14 is 11 feet 4 inches long and 6 feet high. It is 5 feet wide under the table top.

It is worth calling attention again to the similarity of this monument to Altar 4 of La Venta which it resembles as to material, form, dimensions, and subject matter. In addition, both monuments have had the carvings at one end carefully defaced, and in the area thus produced, deep rectangular niches were excavated.

MONUMENT 15

Near the base of a small hill rising from the flat about one-half mile south of the heights of San Lorenzo, and just west of the trail, is a rectangular stone about 2 feet square, the upper part of which is broken off (Monument 15). It is carved as though it represented a chest elaborately bound in ropes. The ropes, which pass around the stone in pairs, enlace the corners and pass over and under each other as they cross on the sides and ends. On what appears to be the front surface, two elongated projecting pieces which passed over the ropes have been broken off. It is possible that a figure was seated on the upper surface and that these were the legs hanging down (pl. 20).

MISCELLANEOUS STONES

Some 400 yards southwest of the central mound is a steep ravine with a small stream of water. At one point, scattered from top to bottom on the south side of the ravine, were several dozen trough-shaped pieces of basalt, open at the ends, and in cross section having the form of a broad-based U. They were not quite uniform as to size, but each unit averaged about 32 inches long, 15 inches wide, and 10 inches high. With them were a lesser number of rectangular flat slabs of the same material, perfectly flat on one surface and slightly curved on the other. These were of adequate size to have served as covers to the trough-shaped pieces. This fact led me to speculate that they may have been joined end to end to form a covered aqueduct. No pieces were found joined in this manner, however, and it is a little difficult to see why so much labor was used in carving stone when wooden conduits would have served as well even though they would not have been so permanent. The hollowed-out pieces also resemble the wooden seats still used by the Cuna Indians of Panama and certain tribes of South America, but if use as seats were their purpose, it is difficult to explain why so many pieces were clustered together. Likewise there would be no explanation for the flat rectangular slabs. Later we discovered a second locality almost a half-mile southeast of this point where we found another group of six of these peculiar stones (pl. 19).

In the bottom of a ravine near Monument 3 we found half of a rectangular plain stone box about 3 feet long. It had been broken in two longitudinally.

About 100 yards east of the central mound was found the torso of a seated figure. The head, arms, and legs are missing. The remaining portion is 2 feet high.

In the bottom of another ravine near Monument 3, and under the roots of a huge Ojote tree, we excavated a large worked oval piece of basalt that could have served as a blank for carving a Colossal Head (pl. 1). In excavating around it we unearthed what appeared to be a metate leg, and a polished ax of blue jade, which had been sawed in two lengthwise.

Various other worked stones of undetermined character, both large and small, were found scattered over the site.

POTRERO NUEVO

Riding south from San Lorenzo along the elevated ridge for three-quarters of an hour, and then turning east for another three-quarters of an hour, one reaches the low flat bottom land of the Coatzacoalcos River. At this point at the base of the ridge, a narrow peninsula of high ground projects for about a quarter of a mile into the swamp. On this peninsula is situated the little village of Potrero Nuevo. From the village one may go by canoe through a slough which winds its way through the potrero and eventually reaches the river. In time of high water the entire potrero is inundated. At extreme high water, only the mounds are above water. In the dry season cattle are pastured on the potrero.

The village is built on an archeological site consisting of a series of small rectangular mounds and squares or courts. Some of the modern houses are built on these mounds. The courts are formed by a fair-sized mound at one end, two parallel flanker mounds on the sides, and a smaller mound at the other end.

At the conclusion of our work at San Lorenzo, we conducted excavations at Potrero Nuevo for 7 days. The pottery encountered at Potrero Nuevo was in general in better condition than that at San Lorenzo and the sherd yield was very abundant. In general the ware types were similar to those at San Lorenzo but with a somewhat greater variety at Potrero Nuevo. Thin red ware with wedge-shaped tripod supports; gray ware with cascabel or cylindrical "can"-shaped supports; incised bowls and ollas and vessels with red paint were characteristic of the ceramics. We excavated a well-made stone figurine in the form of a grotesque crouching old man. There was also a stone ball with a "stem" attached, and a strange tangled snake of stone about 2 feet high (pl. 26, *b*).

Northwest of Potrero Nuevo in the low land on the route of a trail that was closed by fallen trees at the time of our visit is another mound group. This would be an interesting site to investigate, as we bought from a native who found them there three figurines of San Marcos type. One is a standing, skirted figure with upraised hands, another is a monkey head, and the third is an effigy vessel support. Time did not permit our working this site, which may differ from others in the region.

DESCRIPTION OF MONUMENTS

MONUMENT 1

Monument 1, which is badly broken, represents a human or anthropomorphic jaguar figure sitting with legs tucked under. Draped over the lap is a realistically carved serpent, apparently, from the shape of the head and body, representing a fer-de-lance. The body of the serpent is lightly held by the left hand or paw of the seated figure in a very natural pose. Along the back of the figure extends an appendage which tapers slightly from the base upward. This might be a back ornament or it might represent a tail. Unfortunately, the upper part of the figure, including the head, is missing. The part remaining is very well carved and it must have been one of the best in the region (pl. 24).

The representation of the serpent is of considerable interest since, so far as I am aware, it is unique in Olmec art. The only other example known to me is the curious stone snake also from Potrero Nuevo (pl. 26, *b*) which may or may not be Olmec.

MONUMENT 2

About a mile south of the point where the trail to Potrero Nuevo joins the trail leading south along the heights from San Lorenzo is a high hill. From the top of this hill a fine view may be had in all directions. Six months before our arrival, the summit of the hill had been cleared of virgin jungle to make a new milpa. In the course of the clearing, the corner of what appeared to be a large rectangular stone was exposed. We excavated it and found it to be an exceptionally interesting carved altar, lying face down (Monument 2; pl. 21, *a*). Because of being almost completely buried, it is in a fine state of preservation. The front revealed two identical chubby Atlantean figures with arms upraised as though supporting the massive table top of the altar, which was carved on a rectangular base. The front of the altar is carved with two pairs of conventionalized jaguar eyes, while a similar pair is shown on each end. The back is plain. A raised rectangular surface of smaller diameter surmounts the table top. The two figures are nude except for a breech apron and supporting cord. The hair is represented by vertical striations and is cut in "bangs" over the forehead. The features are "Olmec" in character. This is the first representation of Atlantean figures in Olmec art and may be the earliest instance thus far known in the New World (pl. 23).

Like the other table-top altars at San Lorenzo and La Venta, the top projects in front and at the two ends, but not to the rear. Likewise, all of the altars of this type are flat and free from decoration on the back. Probably, like the Colossal Heads, they were meant to be set against a wall.

MONUMENT 3

Monument 3 was found in the same vicinity as Monument 2 on the high elevation west of Potrero Nuevo. The subject, which is similar to Monument 1, Río Chiquito, apparently represented copulation between a jaguar and a woman. The figure of the woman is represented lying on the back with knees drawn upward along the abdomen and with bent elbows, the hands extending upward. The head, hands, and feet are missing. The body of the jaguar is missing except for the hind feet, the lower part of a double back ornament, and the tail. Ornaments in the form of bands with a decorative attachment in the rear are worn about both ankles. The portions of the jaguar which remain are much more animalistic than in Monument 1, Río Chiquito; the feet, claws, and tail definitely identifying the subject. As in the similar monument, this one is mounted on a low flat base. Although badly broken, enough remains to indicate that in its complete form Monument 3 must have been a strongly carved and striking piece of sculpture (pls. 25, 26, *a*). The episode represented must have been an important feature of Olmec mythology. It is particularly interesting in view of the frequent representation of part human and part jaguar figures in Olmec art, these often having infantile characteristics. The infant shown in Monument 12, San Lorenzo, appears to have a human body and a jaguar head.

STONE SNAKE

A curiously convoluted snake, carved from basalt, was dug from one of the small mounds at Potrero Nuevo in the course of building a house, a few days previous to our first arrival there. It was complete when found except for the head. Children broke it in several pieces, but fortunately none were missing. The lower coils were so arranged as to make a firm, flat circular base. The concept is unique and has nothing in common with the manner of representing coiled snakes during the Aztec period in the Valley of Mexico (pl. 26, *b*).

GENERAL DISCUSSION

With the exception of the two large granite columns excavated near the river bank below the village of Tenochtitlán, all the stone monuments which we found were carved from basalt. The five Colossal Heads from San Lorenzo are remarkably similar in character to those from La Venta and Tres Zapotes. In some instances it does not seem improbable that the same artists operated in the three sites. While at first glance the various heads appear very similar, closer examination shows that this resemblance is probably due to the racial type represented, and each is actually quite individual in character. Close study of these heads leads me to the belief that they are actual portraits of prominent individuals. One characteristic that all the Colossal Heads share is a smooth, plane surface a foot or more in width that runs the full length of the back. With one exception (Monument 2 at San Lorenzo) these surfaces are practically devoid of decoration. It may be, therefore, that the heads were designed to be set up against a wall of some sort. This theory is strengthened by the fact that in general the sculptors designed the heads to be viewed from the front, or a three-quarters angle.

When Monument 4 at La Venta, the largest Colossal Head at that site, was excavated, a large chunk which had been broken from the lower jaw was found under the head. The outer surface of this was covered with a thin smooth white slip which had been painted a dark purplish red. This suggests the interesting possibility that originally the Colossal Heads had been painted.

The helmetlike headdresses that adorn all the Colossal Heads are probably an artistic conventionalization. In carving such large blocks of stone it would have been impractical to represent adorn-ments such as feathers, sticking out as actually worn. The sculptors therefore showed them as lying flat against the head. This not only resulted in economy of material, but also prevented making what would have been a very fragile portion of the monument.

As of the present date, 10 typical Colossal Heads are known. Five from San Lorenzo, four from La Venta, and one from Tres Zapotes. Stylistically these heads are so similar, and parallels in detail are such as to force the conclusion that no very great time interval could have elapsed during which they were made.

The table-top altars also connect the Río Chiquito area with La Venta. The parallels between Monument 14 at San Lorenzo and Altar 4 at La Venta have already been pointed out.

Monument 2, Potrero Nuevo, is somewhat atypical with its Atlantean figures and lacking the arched niche in front and the end carvings. However, the general form, the raised rectangle on the top, and the jaguar motive are sufficient to class it with this group.

If the site at Potrero Nuevo proper is to be classed as Olmec, it is unique as regards the two serpent carvings. The draped serpent on Monument 1 is unusual because of the realistic manner of its portrayal. It is flat, with a ridge along the back exactly like a real snake instead of the cylindrical conventionalization one usually sees employed in pre-Columbian art. The blunt triangular head also is realistic enough to identify the species as a fer-de-lance.

The curious tangled serpent from Potrero Nuevo is also unique because of its unusual form.

The two jaguar and woman monuments (Monument 1, Río Chiquito, and Monument 3, Potrero Nuevo) are interesting as possibly casting light on the half-jaguar, half-human form so characteristic of Olmec art.

The Río Chiquito region, like the other Olmec-site areas of southern Veracruz and northern Tabasco, is far removed from the sources of basalt from which the great majority of the monuments are carved. The nearest source of basalt is in the region of San Martín Pajapan Volcano near the coast, or in the Tuxtla Mountains to the north. In the case of the Río Chiquito this would be an air-line distance of more than 50 miles. It seems probable therefore, that the heavy pieces of basalt must have been transported by water, probably along the coast to the Coatzacoalcos River and then along the river or its tributaries to the site.

It is interesting to note that the two large columns of granitic schist found in the deeply buried site at Río Chiquito seem to be made from the same material as the large column of the same dimensions on the south end of the long mound at La Venta, and therefore probably came from the same source.

The stone monuments from the region of the Río Chiquito present an interesting addition to our gallery of Olmec art. Here, particularly at the site of San Lorenzo, the Olmec art of sculpture of large monuments in stone may be said to have reached its climax.

The elevated strip of land on which the Río Chiquito sites are situated was in many ways ideal for the location of ceremonial centers. During the dry season the inhabitants could have extended their milpas over the broad alluvial plains and retreated to the high ground during the wet season. The navigable waters of the Coatzacoalcos River and its tributaries, as well as the network of interconnecting sloughs, gave easy access to a large territory. Since the Coatzacoalcos is the natural waterway across a large portion of the Isthmus of Tehuantepec, access to the Pacific coast would have been easy. Archeological evidence, however, does not indicate that such contacts were strong. On the other hand, intercourse toward the north in the direction of the Gulf of Mexico was obviously carried on. It seems apparent that the Chiquito sites represent an upriver thrust stemming from locations nearer the coast, such as Tres Zapotes and La Venta. Whether or not a blending with centers of more southern origin took place awaits a detailed study of the ceramics of the Chiquito sites.

In every way the stone carving suggests direct communication between all of these classic Olmec sites. Not only are there close parallels in the art style, but the nearest source of the basalt used for the majority of the monuments is in the vicinity of the coast. The tedious operation of transporting these heavy stones, presumably by water, over such long distances suggests that peaceable relations were maintained over the region and quite probably there was intercommunity cooperation and trade. Whether each center was an independent political entity or whether the entire area was subject to central control is a matter for speculation.

Mound building was a feature of all of the classic Olmec sites, the structures reaching considerable proportions at La Venta, Tres Zapotes, and Río Chiquito. At San Lorenzo, despite the outstanding sculpture, the mounds were insignificant. It is possible that at San Lorenzo the site never reached its full development. At the present time the site is some distance from the river. It may be that at the time it was occupied, the channel touched the base of the high ground at the eastern edge of the site where the principal occupation debris exists. If a change in the course of the river was responsible for the abandonment of San Lorenzo, it seems strange that the monuments were not moved. Otherwise it would seem plausible to speculate that the inhabitants moved to nearby Río Chiquito, on the river, where the mound structures are impressive and the stone monuments few.

It is worth noting that if rich tomb burials such as exist at La Venta were present at San Lorenzo, we were unable to find them, although we conducted excavations of considerable extent in equivalent areas. The classic Olmec period at Tres Zapotes likewise lacked tombs and any evidence of lavish burials. There is more than a hint in this fact suggesting that La Venta was the regional center of the classic Olmec area and the place of residence of rich and probably powerful rulers. Not only was the central mound at La Venta 105 feet high, the largest of all, but the stone column enclosure containing the lush tombs is completely unique. The Río Chiquito region, it would appear, was a prosperous but subordinate area.

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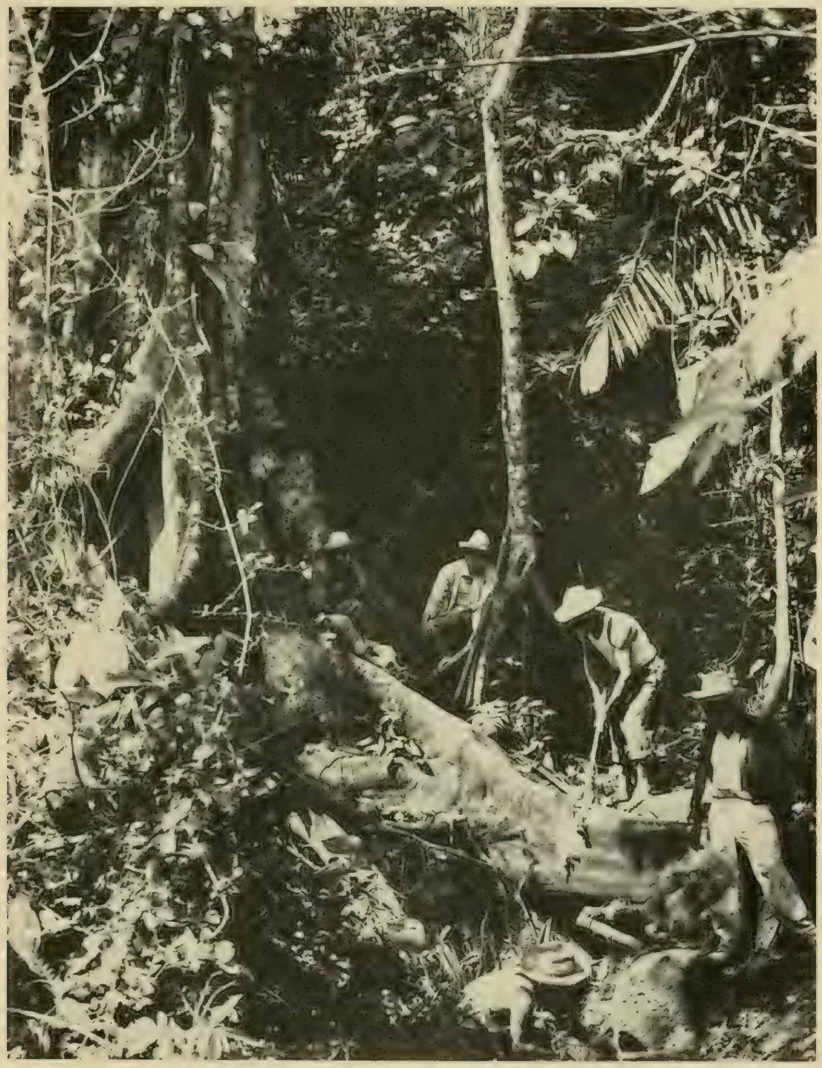
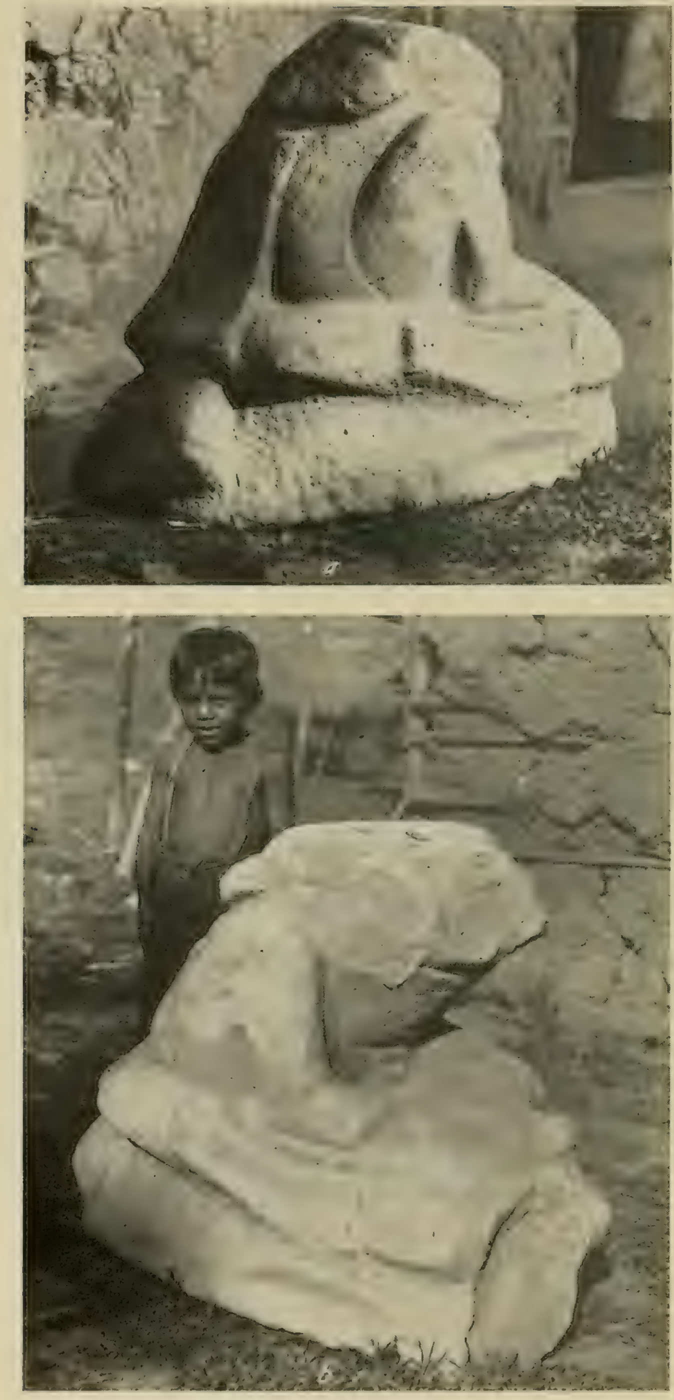
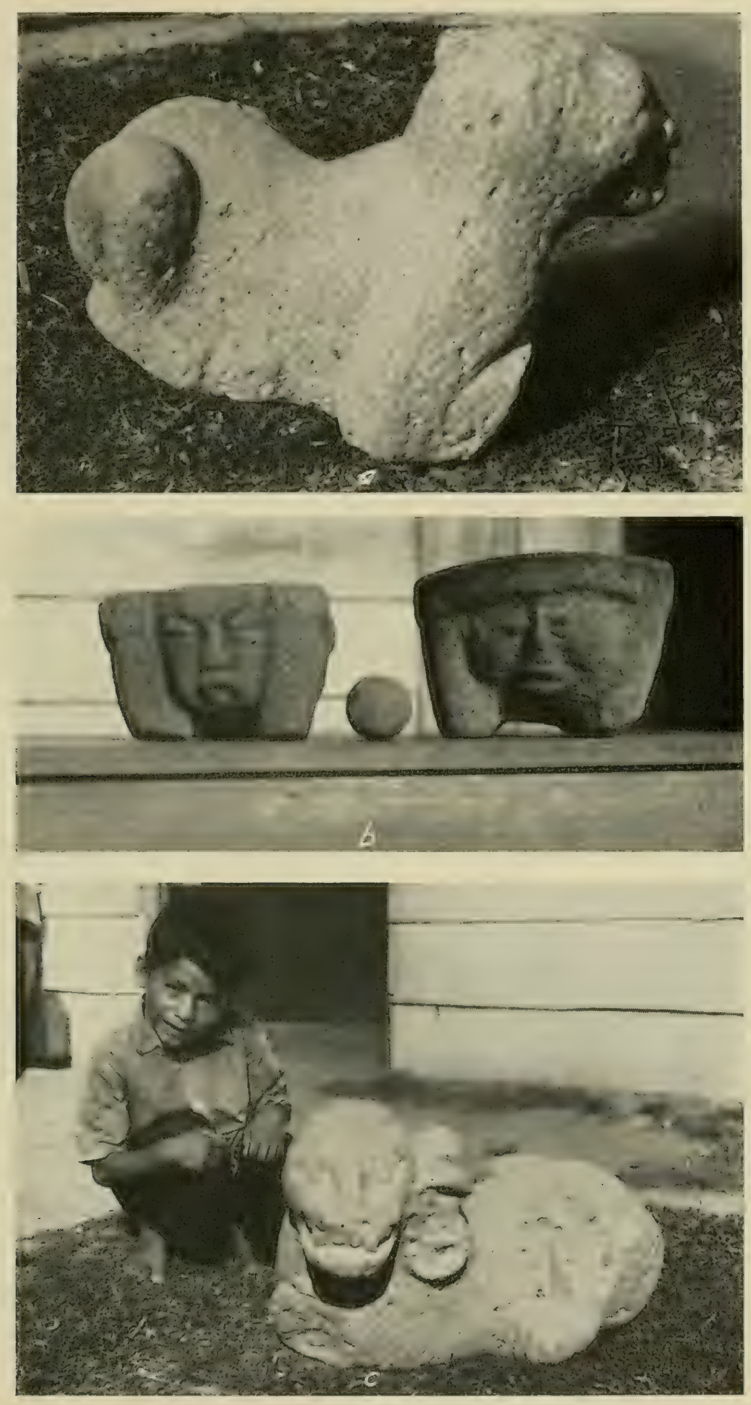


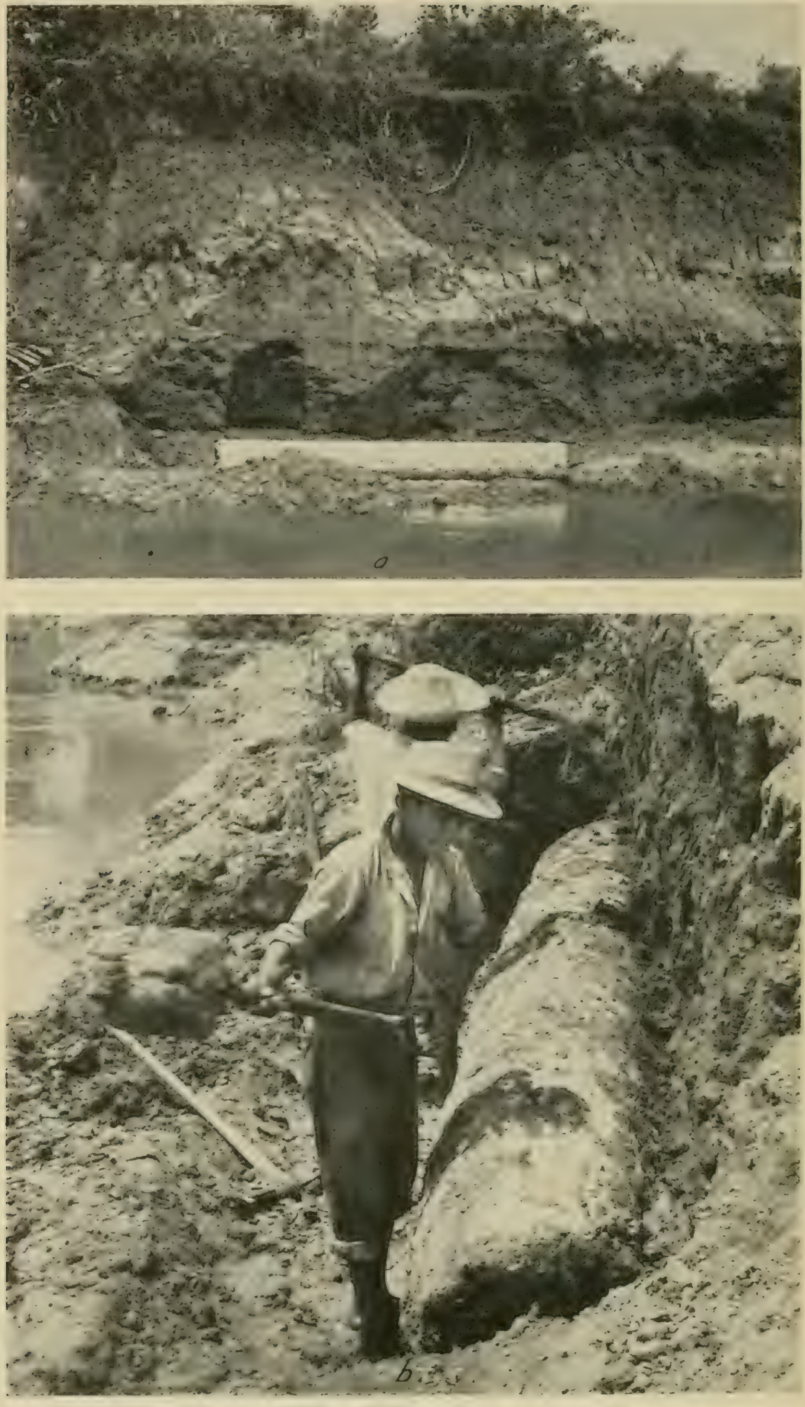
Clearing a monument at San Lorenzo.
Type of jungle growth that covered the site.



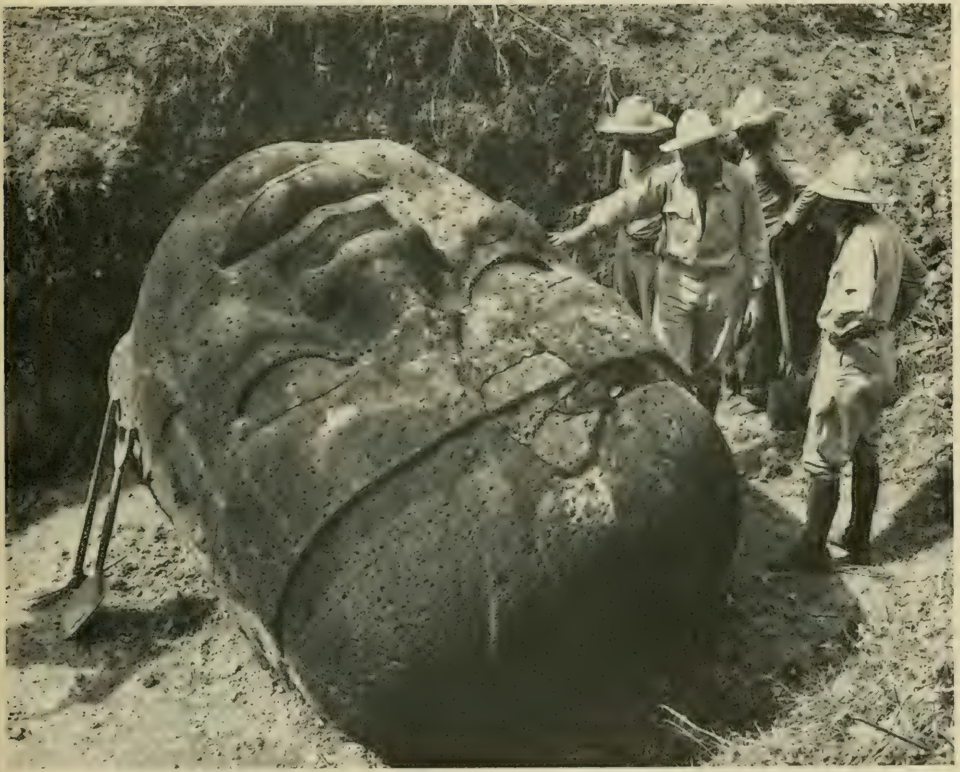
Río Chiquito. *a*, *b*, Monument 1.



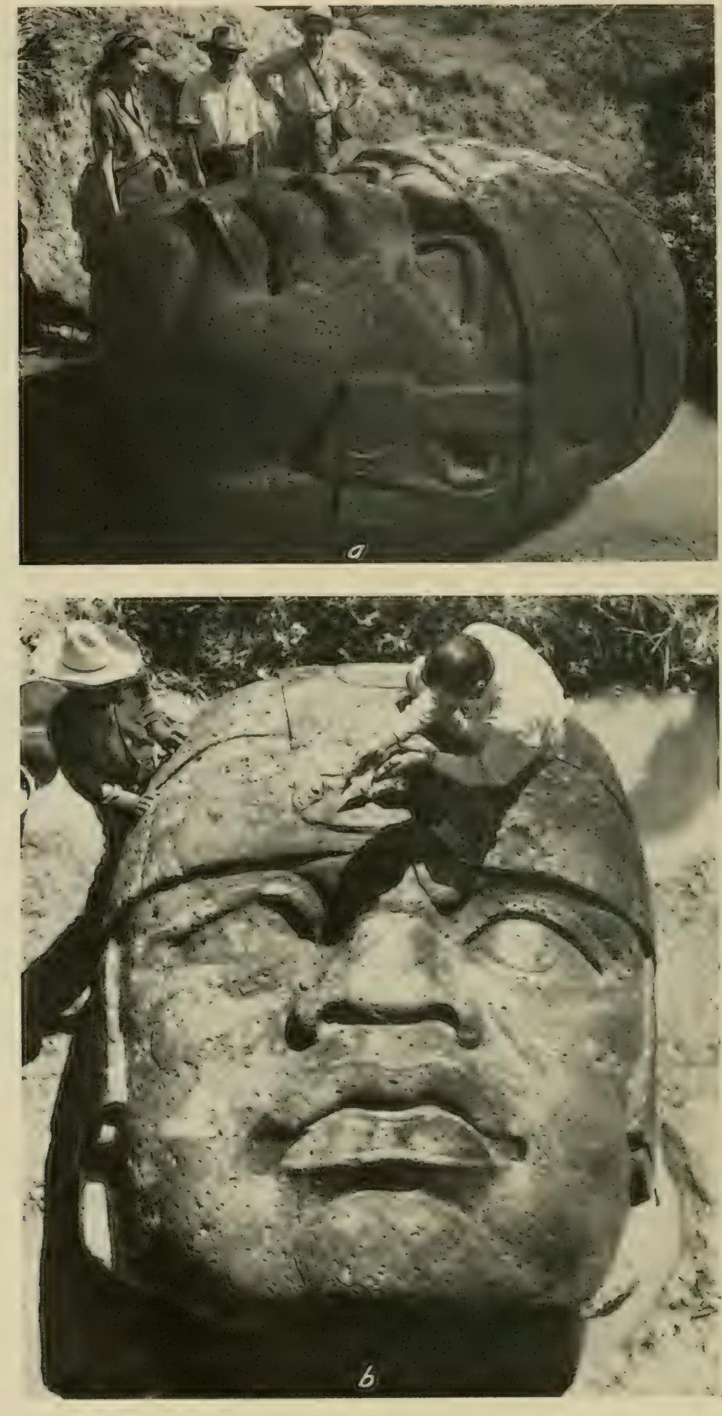
Río Chiquito: *a, c,* Monument 2; *b,* stone vessels.



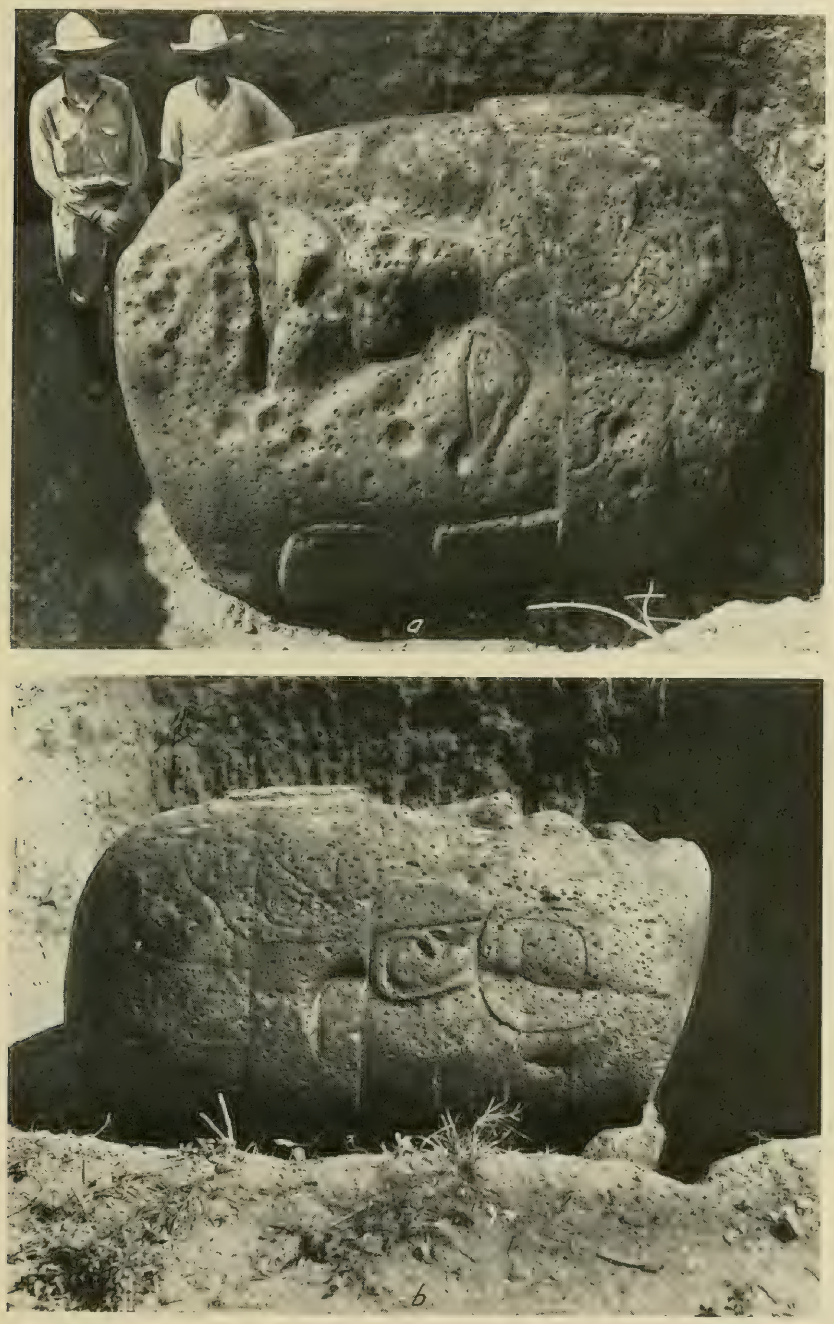
Río Chiquito: *a, b,* Granite columns.



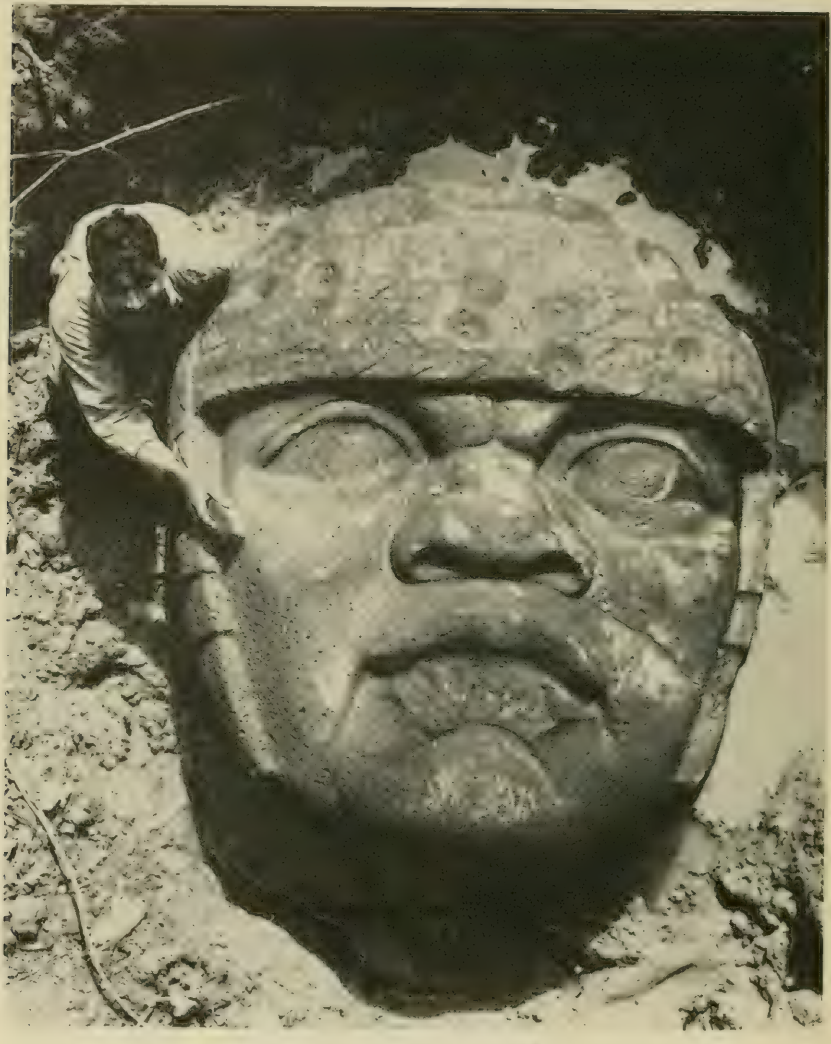
San Lorenzo. Monument 1.



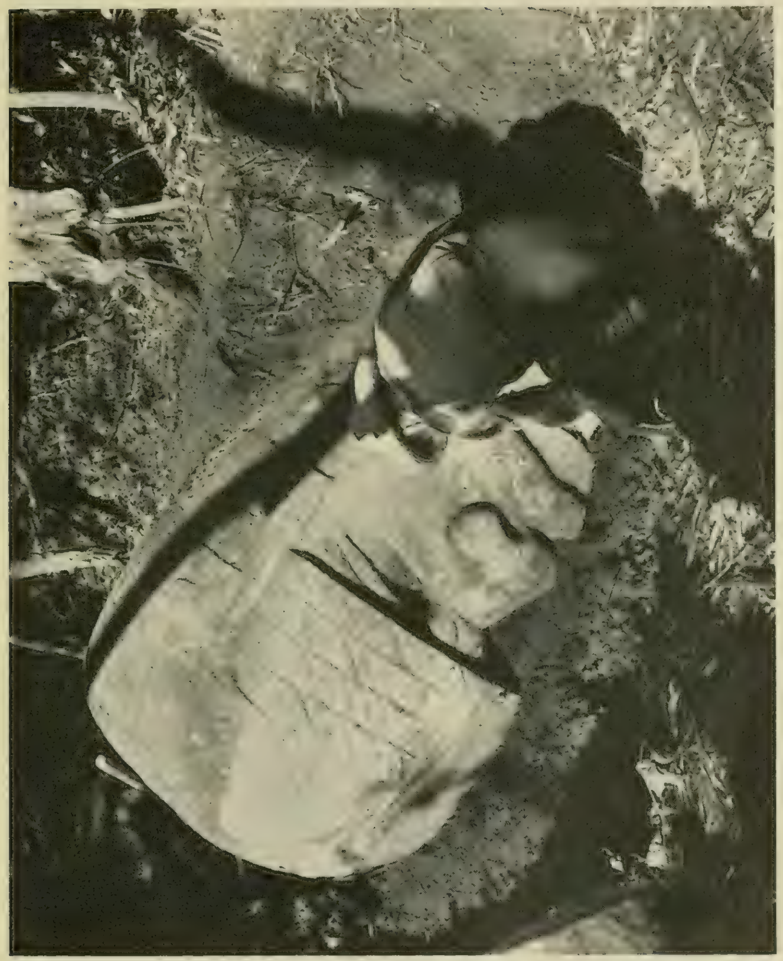
San Lorenzo. Monument 1.



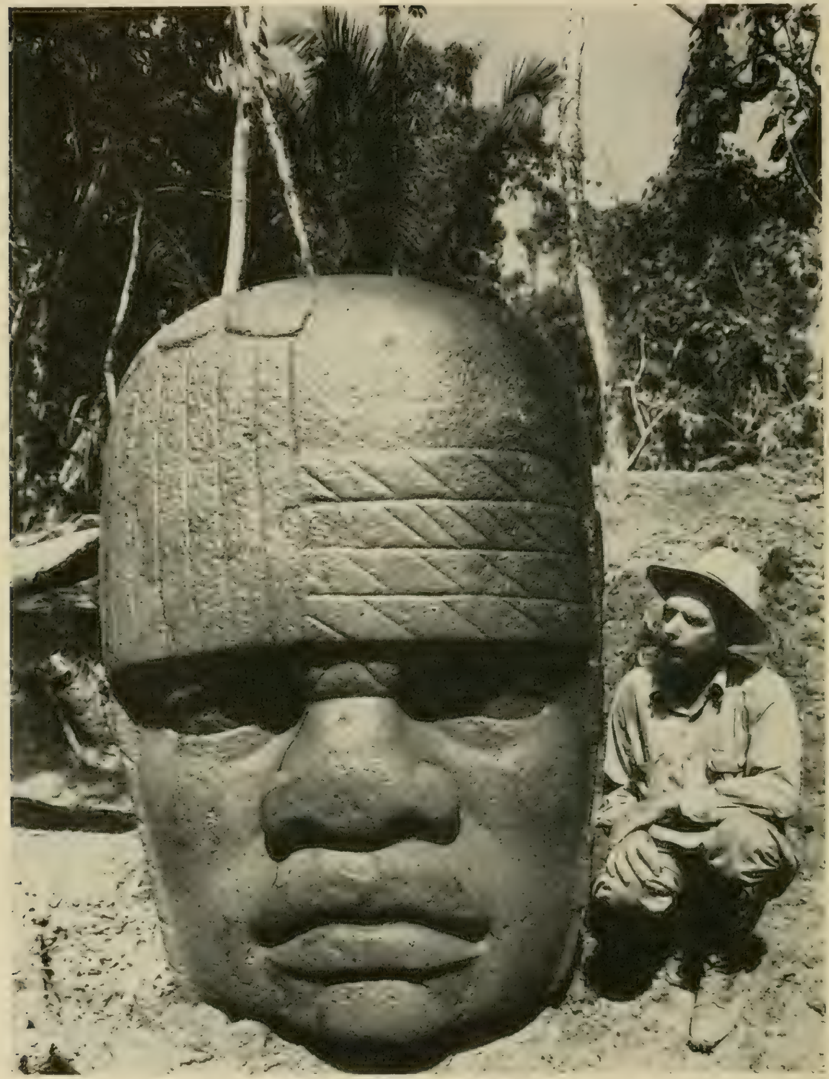
San Lorenzo. *a*, *b*, Monument 2.



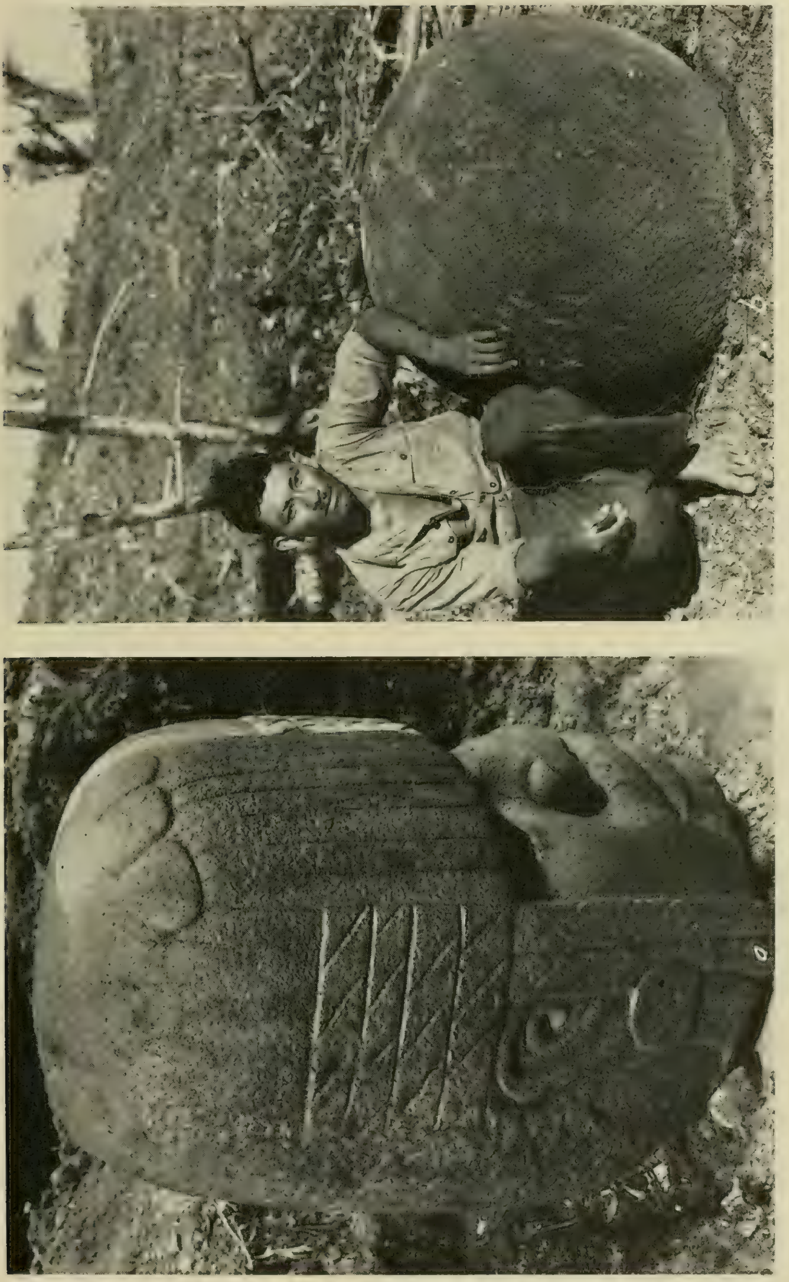
San Lorenzo. Monument 3.



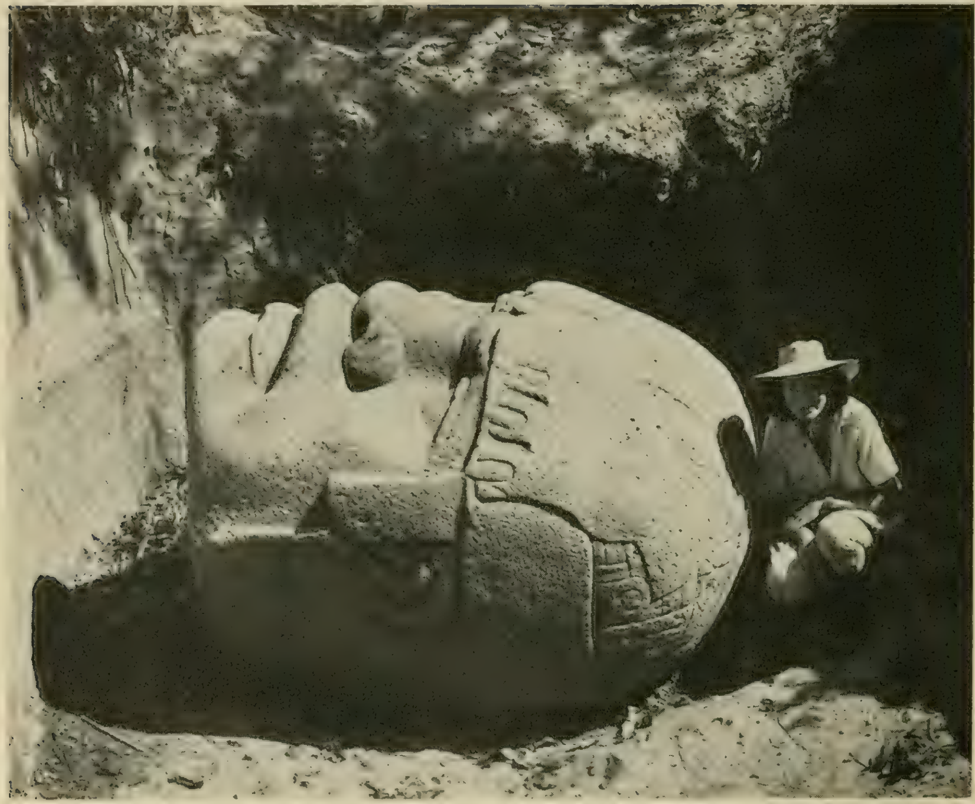
San Lorenzo. Monument 4.



San Lorenzo. Monument 4.



San Lorenzo: *a*, Monument 4; *b*, Monument 13.



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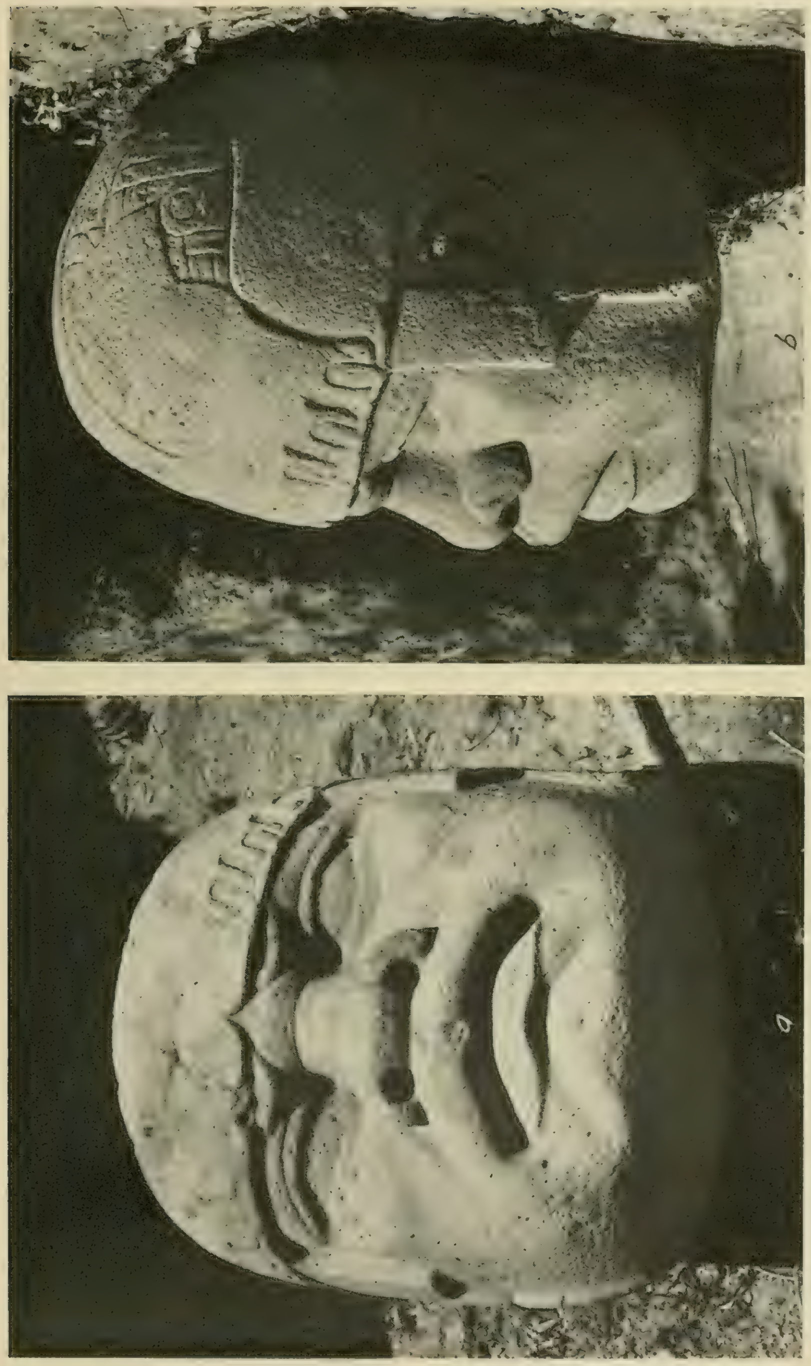
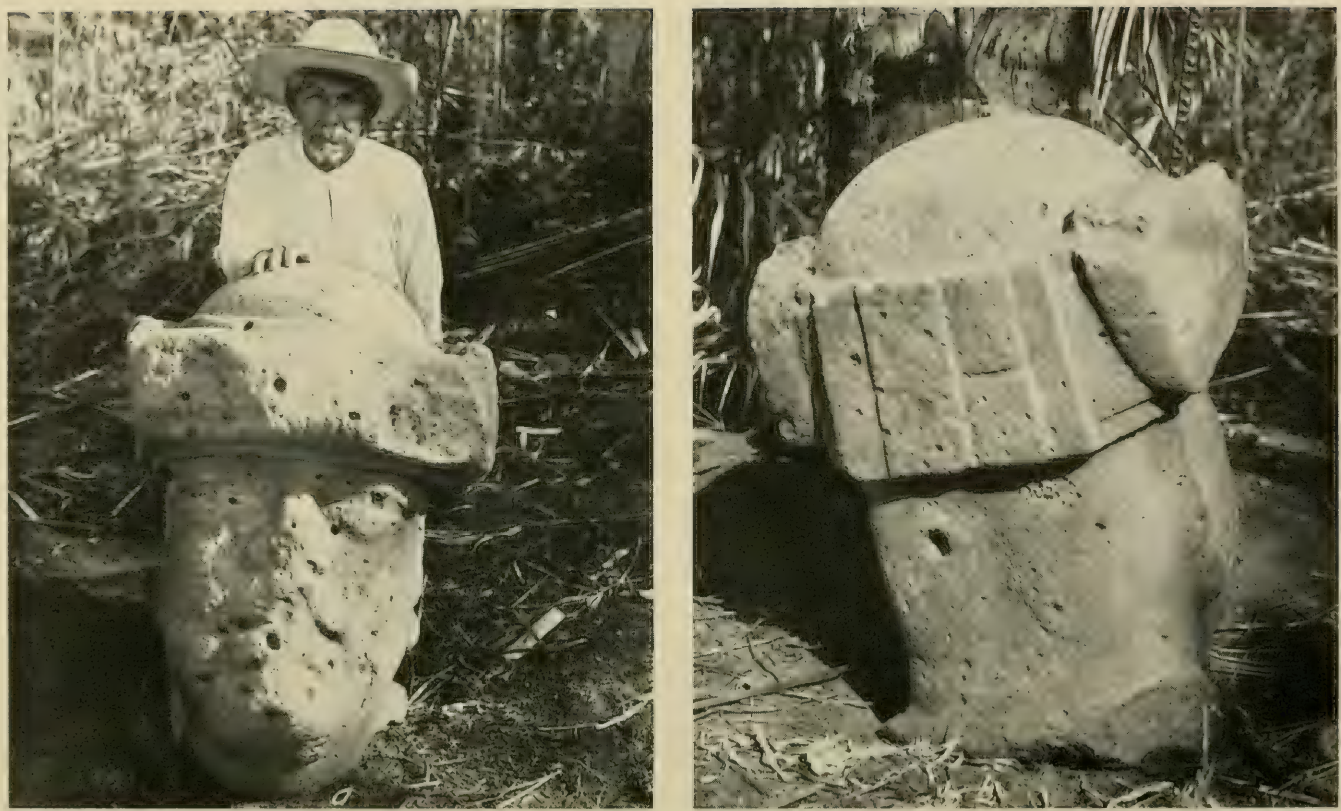
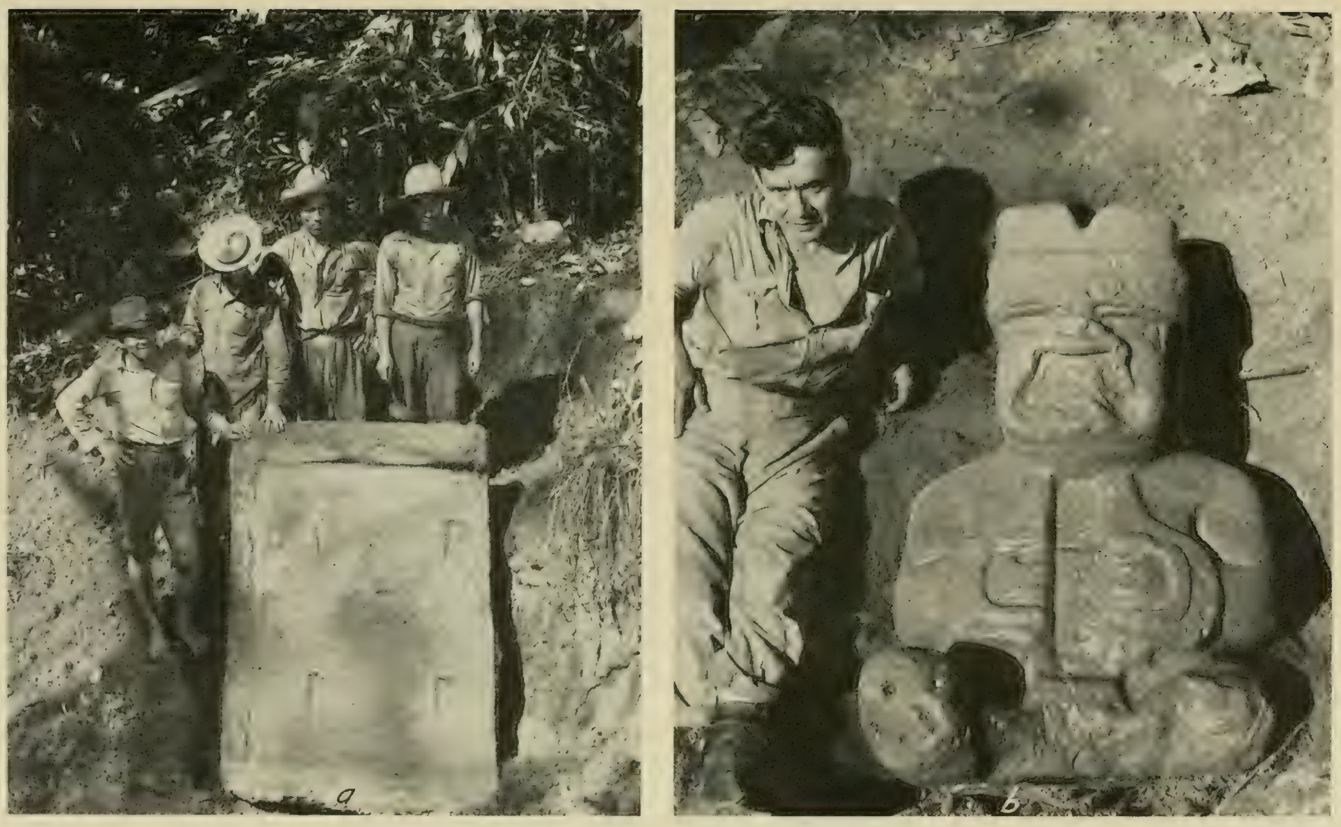


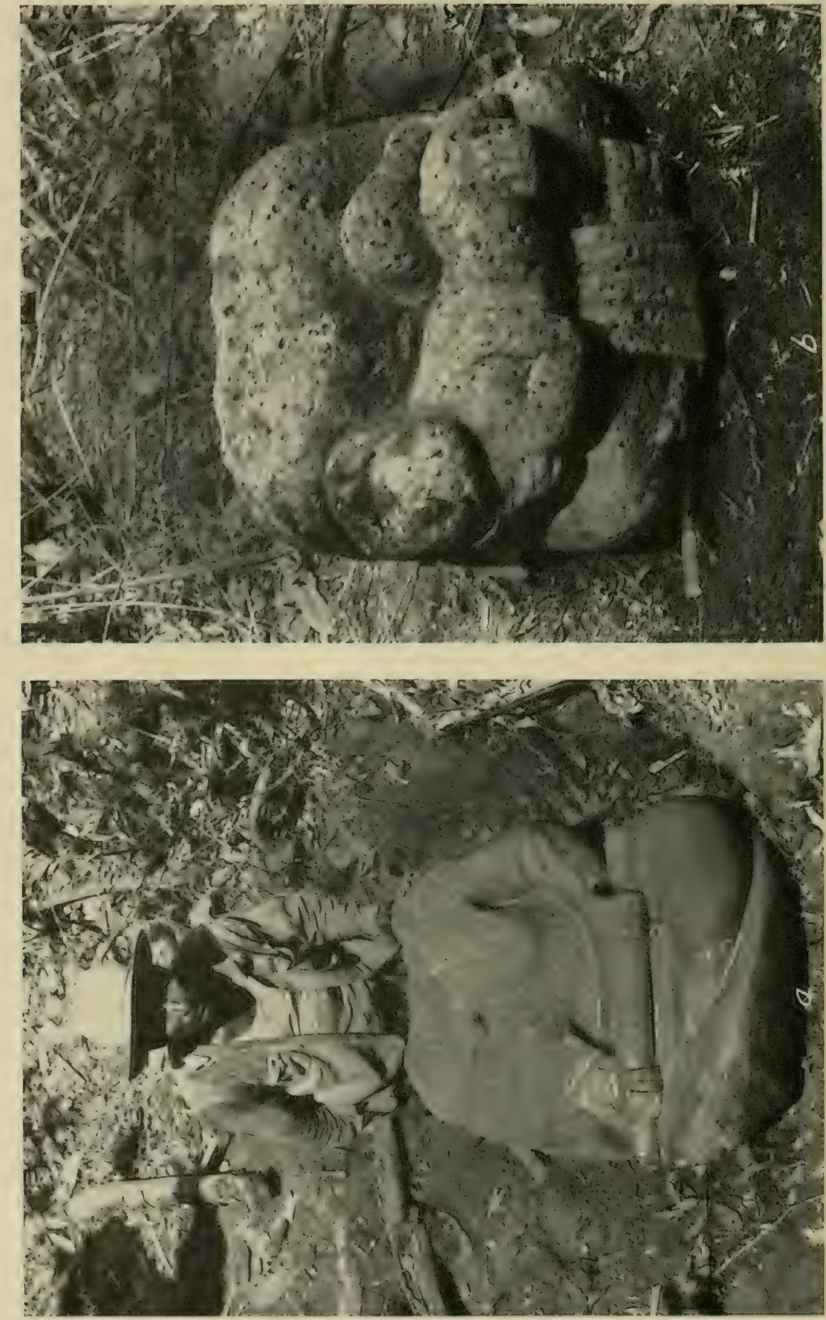
San Lorenzo. *a*, *b*, Monument 5.



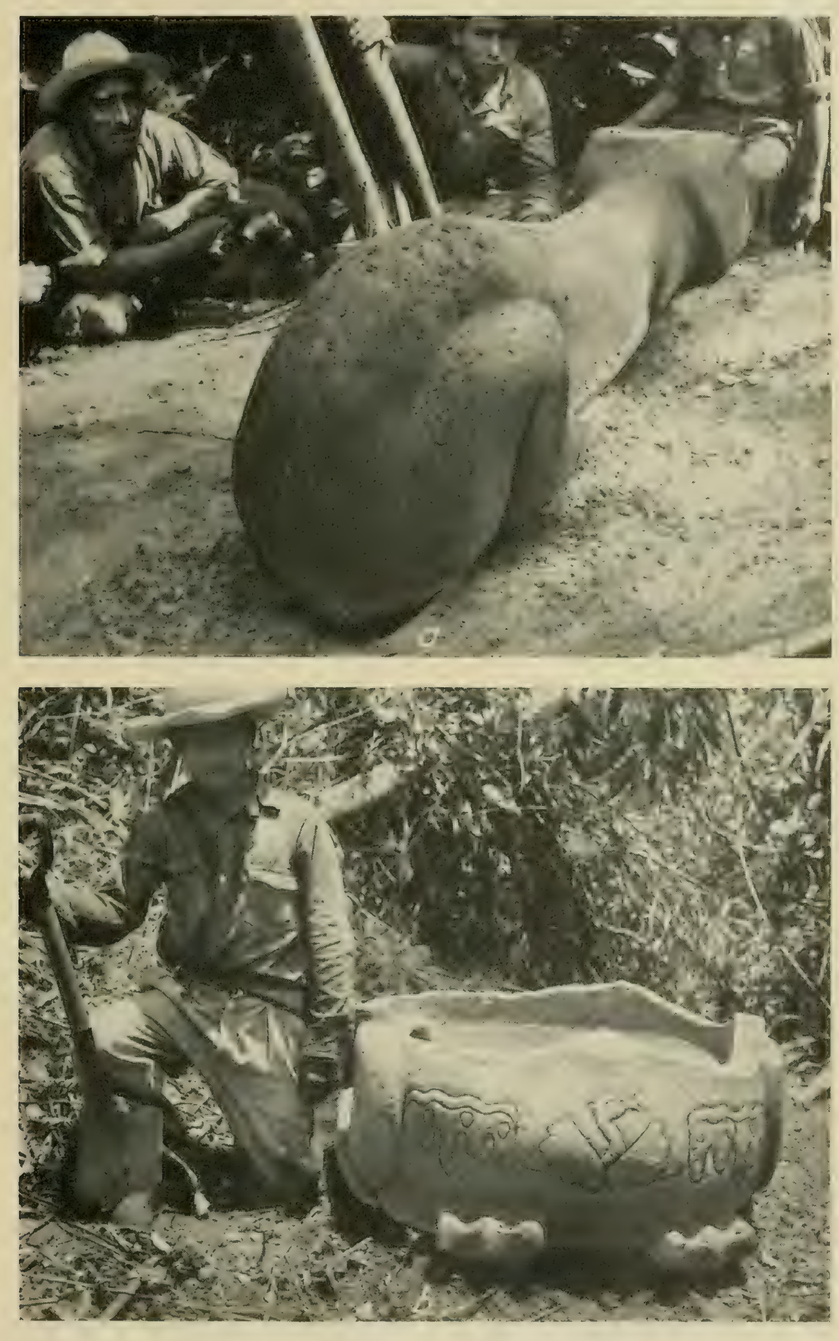
San Lorenzo. *a*, *b*, Monument 6.



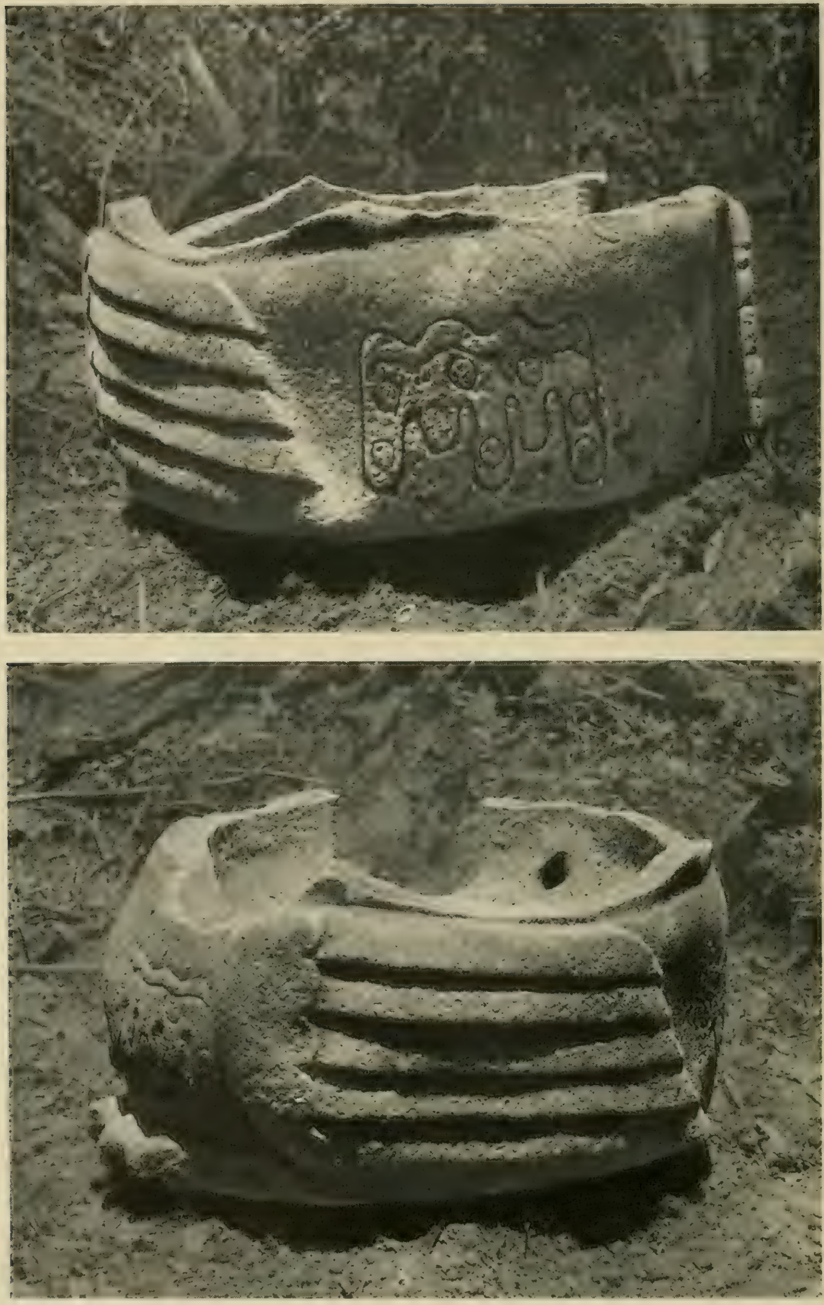
San Lorenzo: *a*, Monument 8; *b*, Monument 10.



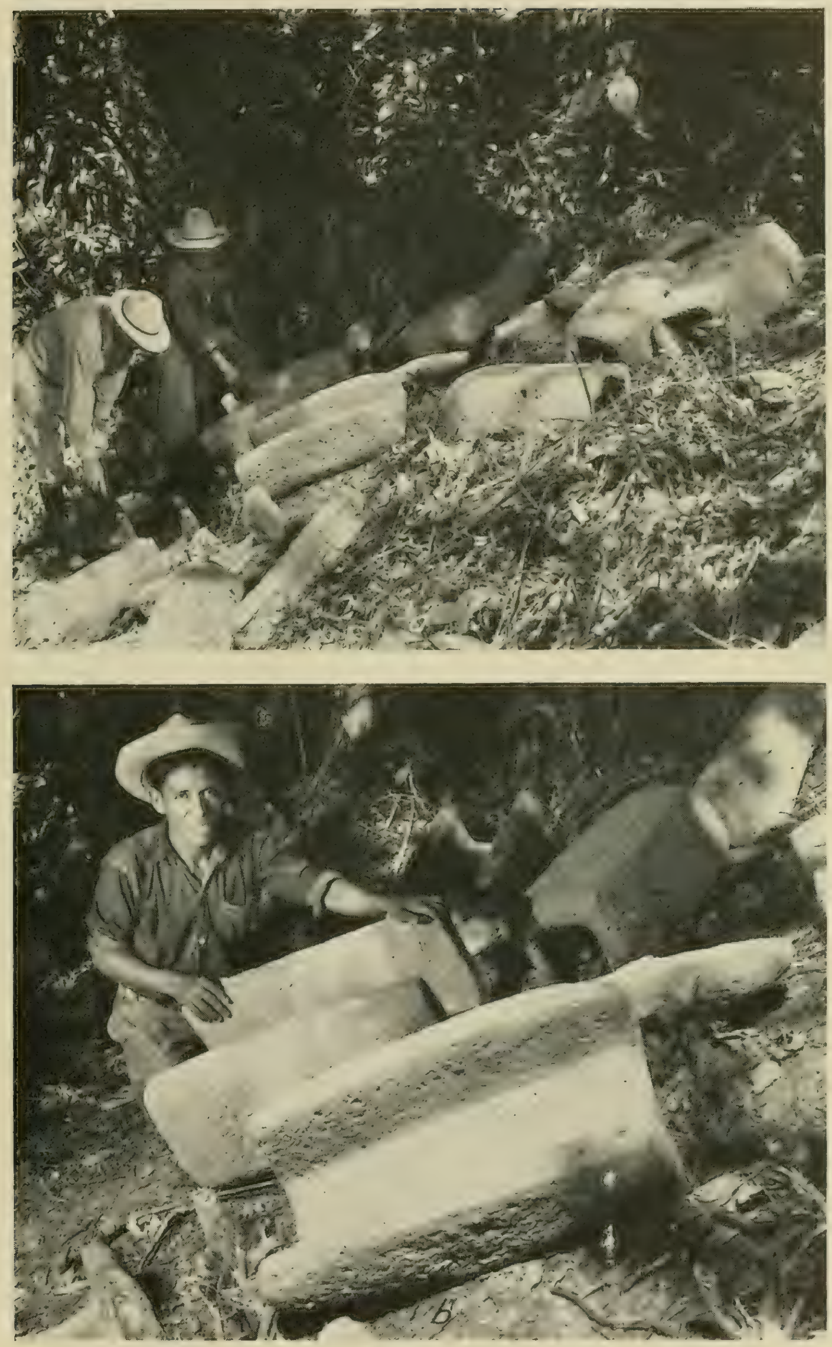
San Lorenzo: *a*, Monument 11; *b*, Monument 12.



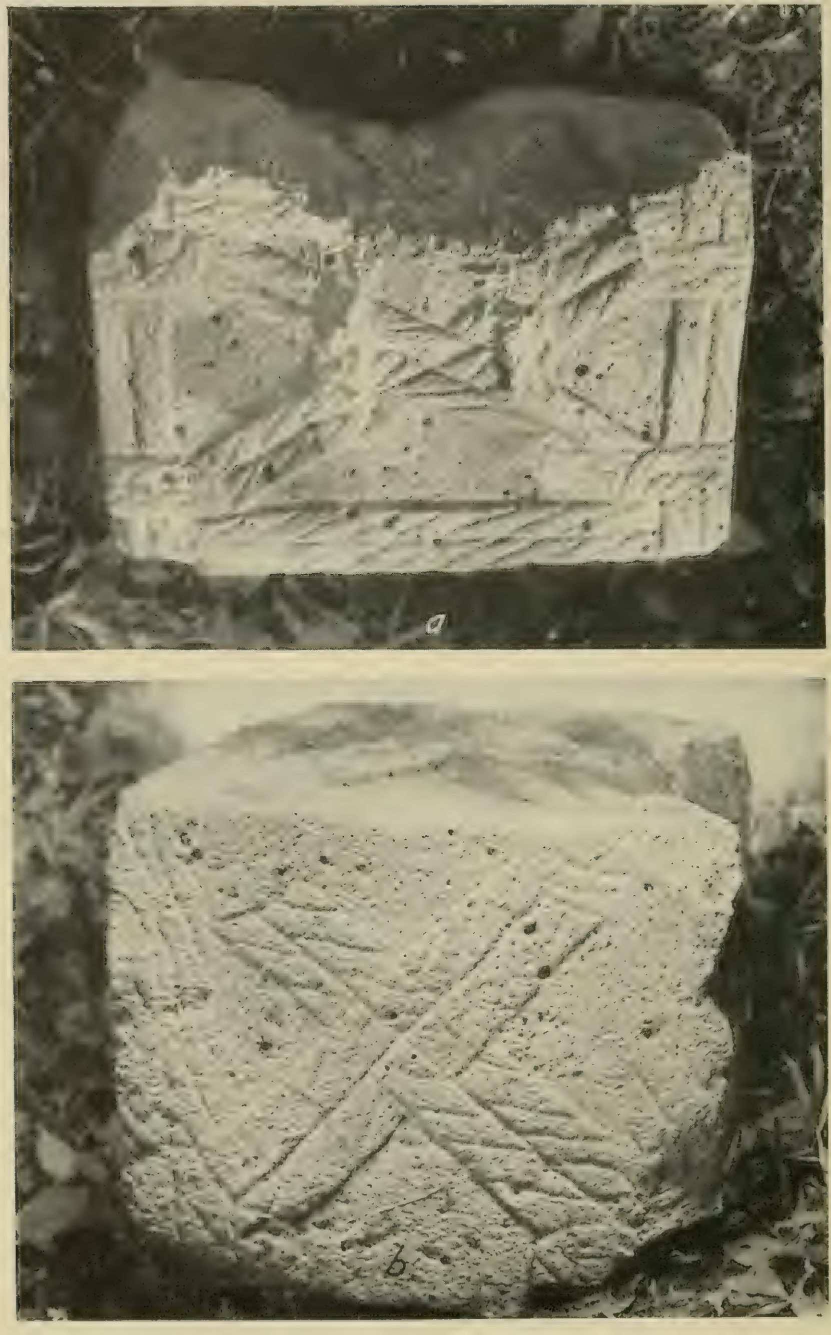
San Lorenzo. *a*, Monument 7; *b*, Monument 9, front view.



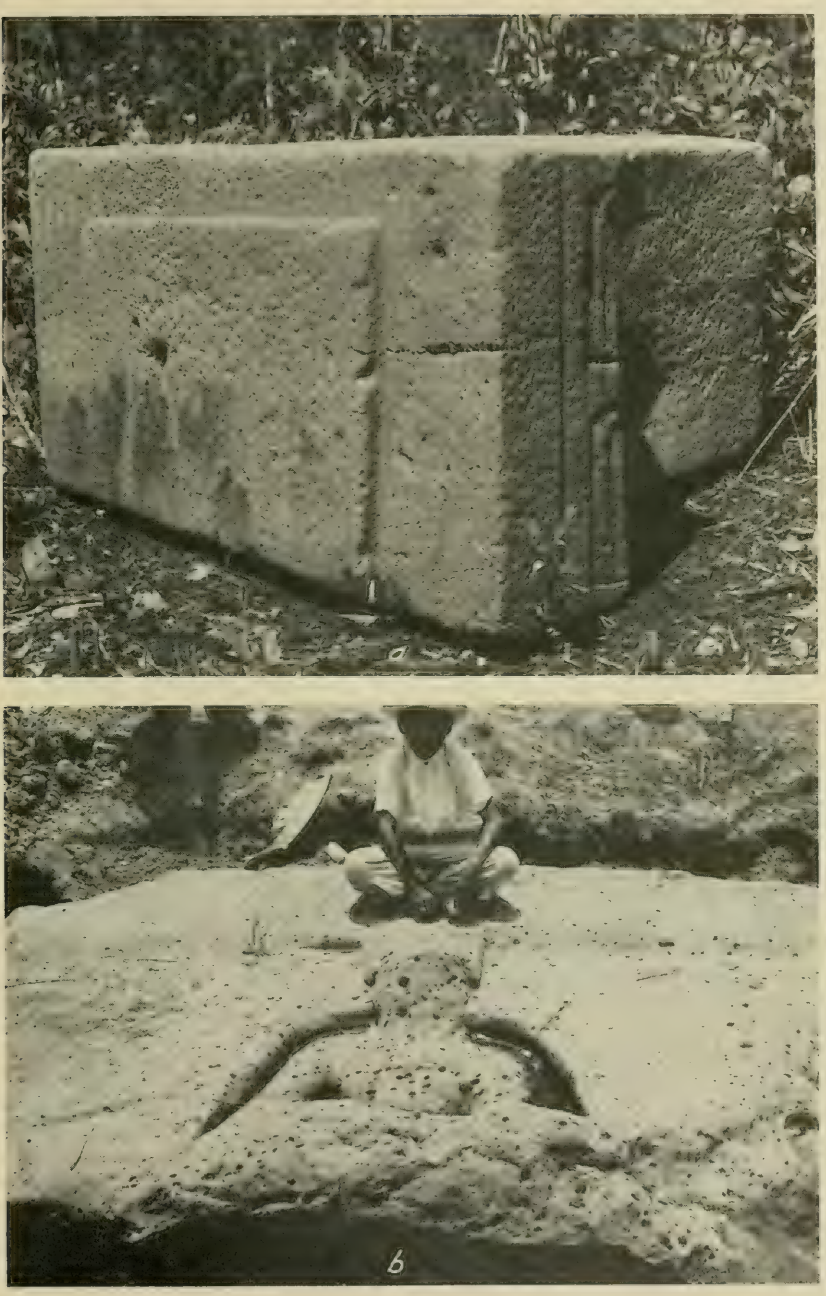
San Lorenzo. Monument 9: *a*, rear view; *b*, side view.



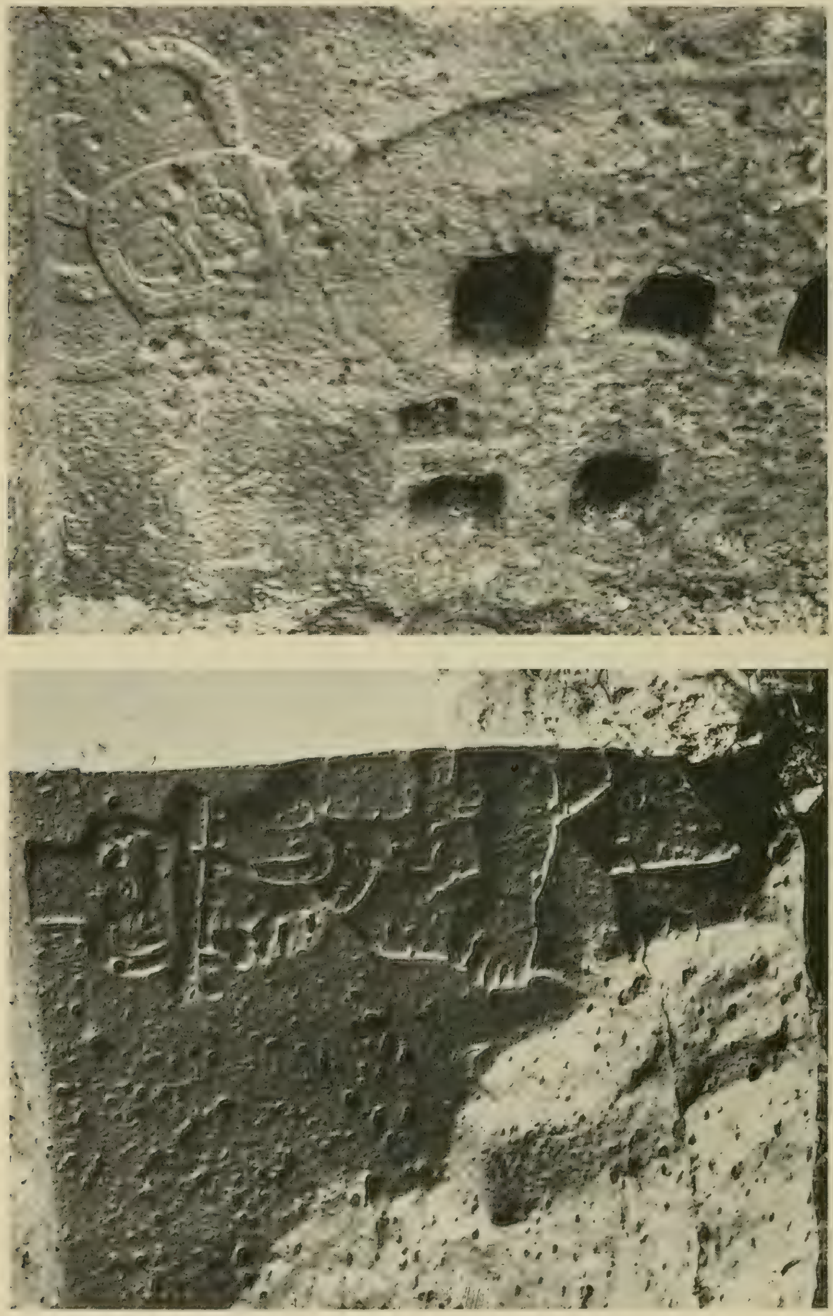
San Lorenzo. *a*, *b*, Trough-shaped stones.



San Lorenzo. *a*, *b*, Monument 15.



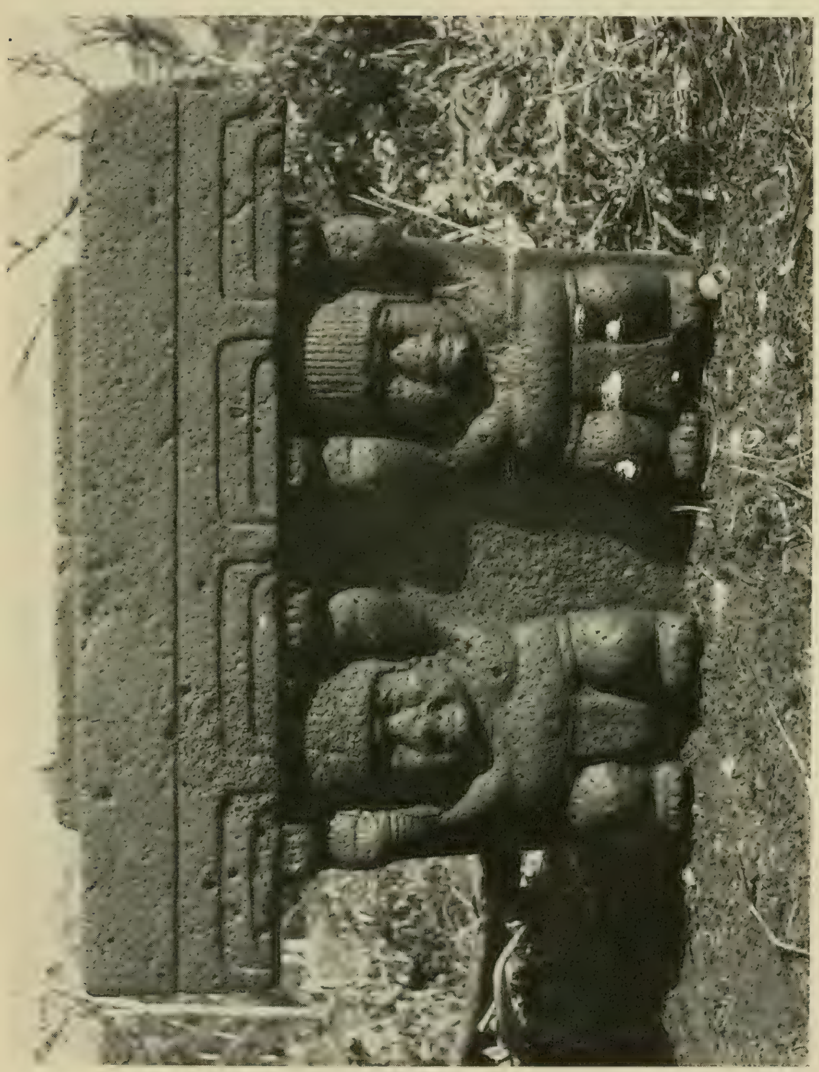
a, Potrero Nuevo, Monument 2. *b*, San Lorenzo, Monument 14.



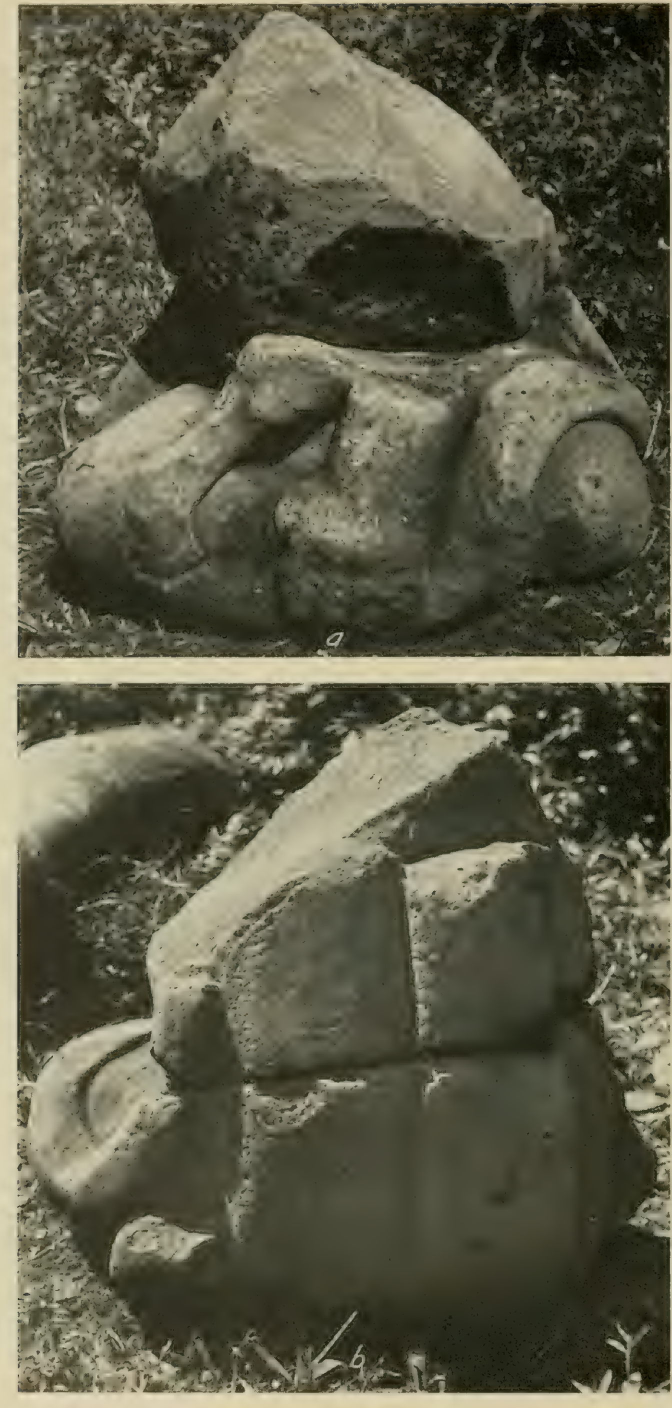
b

a

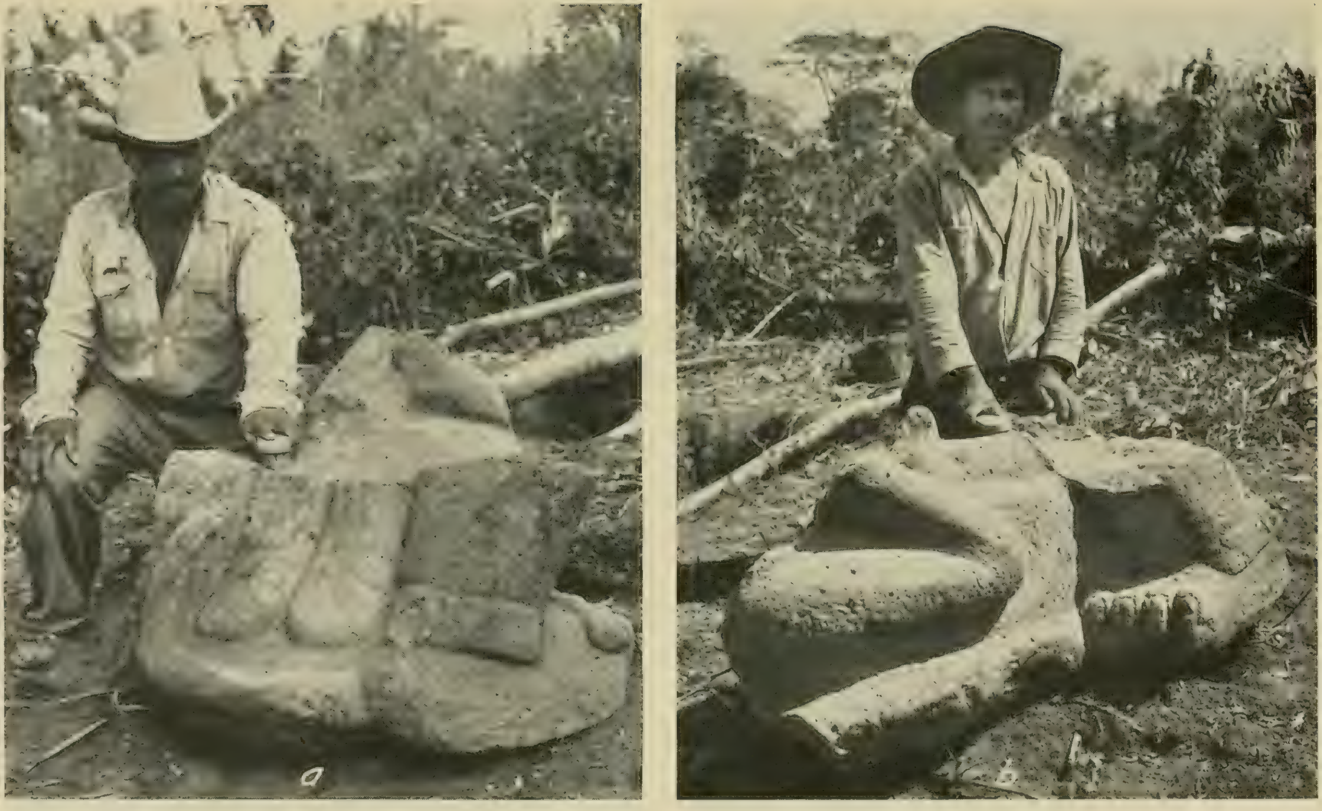
San Lorenzo. Monument 14: *a*, south end; *b*, north end.



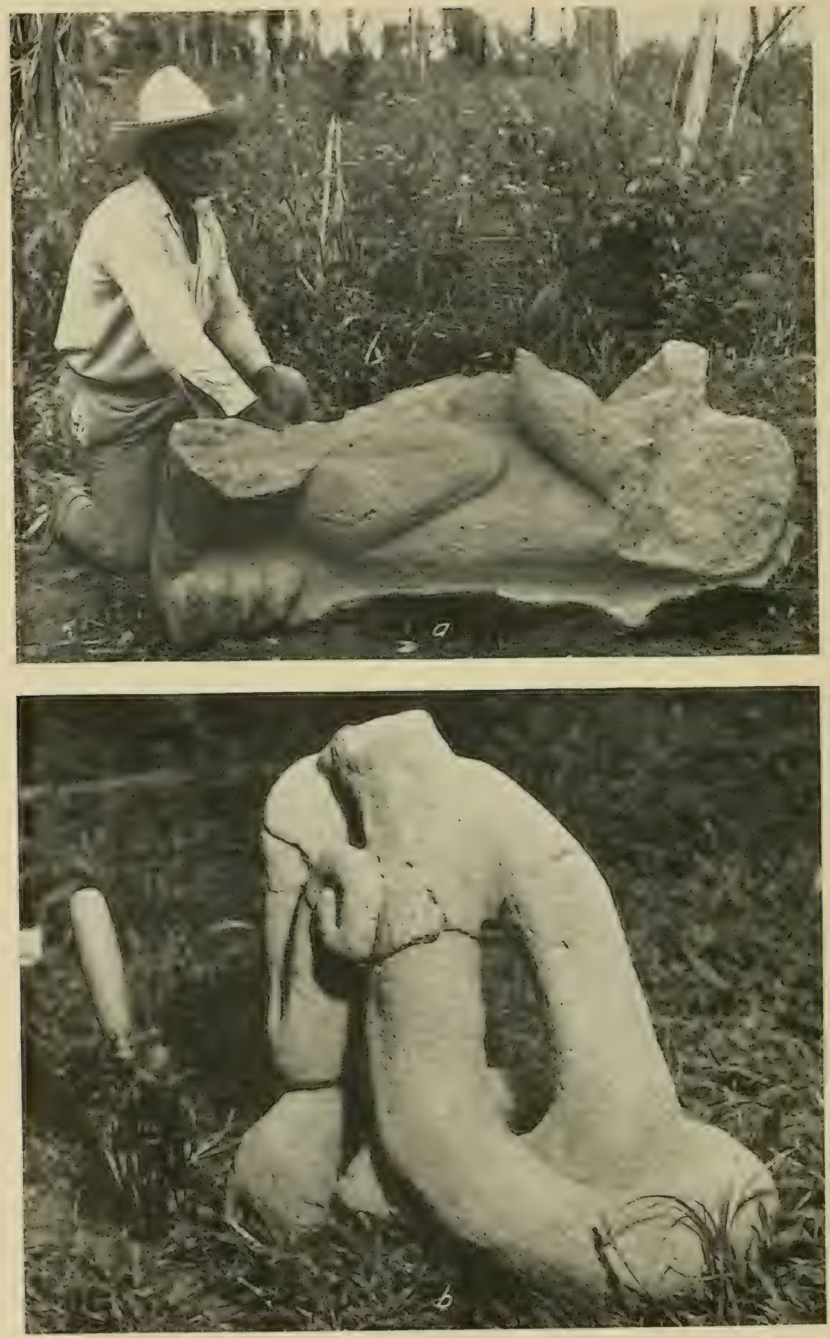
Potrero Nuevo. Monument 2.



Potrero Nuevo. Monument 1: *a*, front view; *b*, rear view.



Potrero Nuevo. Monument 3: *a*, rear view; *b*, side view.



Potrero Nuevo. *a*, Monument 3, side view; *b*, stone serpent.

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The Cerro de las Mesas Offering of Jade and Other Materials

By PHILIP DRUCKER

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THE CERRO DE LAS MESAS OFFERING OF JADE AND OTHER MATERIALS

By Philip Drucker

INTRODUCTION

In the course of the National Geographic Society–Smithsonian Institution archeological investigations at the site of Cerro de las Mesas, in Veracruz, Mexico, in 1941, Stirling encountered an impressive offering of jade objects at the foot of a large mound through which he was driving a cross-section trench. He has described this find briefly in a popular article (Stirling, 1941). The present writer also mentioned this offering in his report on the ceramics of the site, pointing out that in view of the pottery associations, including both sherds contained in the mound mass and cache lots of vessels placed with burials in the mound, the jade cache was probably to be reckoned as belonging to the Lower II horizon (Drucker, 1943, pp. 11, 79). After that time we often discussed the desirability of making a detailed study of the jade objects, but, as with the weather, we did nothing about it. Finally, in the spring of 1952, Stirling arranged that the writer should make a brief trip to Mexico, to the Museo Nacional where the collection is housed, to study it. The present report is based upon that study.

Through the courtesy of the Director of the Museo Nacional, Dr. Eusebio Dávalos H., the writer was able to examine and compare the jade specimens, both those in the storage vault and those on exhibit in the halls. It turned out, however, that the entire lot was not available: there were a few pieces which had been sent on loan to various local museums, etc. However, the bulk of the material was in the Museo Nacional, and it is believed that there are very few significant features or types among the unavailable specimens (which consist mostly of earspools and beads, according to the inventory prepared by Lic. Valenzuela in 1941 when the lot was received by the museum). A few pieces only will be described from photographs made in 1941 rather than from the 1952 study.

The writer wishes to express his gratitude to Arq. Ignacio Marquina, Director of the Instituto Nacional de Antropología é Historia, to

Sr. Eduardo Noguera, of the same organization, and to Dr. Eusebio Dávalos, Director of the Museo Nacional, for authorizing access to the collections and for providing every facility for studying them. Thanks are also due to Dr. W. F. Foshag, of the United States National Museum, for information on the mineralogy and source of the jadeites.

THE CERRO DE LAS MESAS OFFERING MATERIALS

The purpose of this paper is primarily descriptive, and to get on record some information about the Cerro de las Mesas jades. With as few sizable lots of jade objects firmly placed in space and time as there are—Monte Albán, and from the recently published reports, Uaxactun, Nebaj, and Kaminaljuyú are the sources of the principal exceptions—detailed comparative studies of Mesoamerican jade are not likely to be very rewarding. In certain cases similarities to materials from other sites or regions can be pointed out, but no very definitive conclusions can be drawn from these few comparisons. Similarly, certain peculiar forms may be, for all we know, distinctive local styles or they may be imports from some other archeologically little-known region. Or some of the peculiar forms may be cultural sports, of no particular significance.

Even after we have descriptions of a good number of jade collections whose proveniences are known, jade is likely to prove a difficult material to study. Not only were jade objects traded widely in Mesoamerica, but as has been shown repeatedly, some pieces were preserved a long time—as heirlooms perhaps, or treasures, or possibly even as objets d'art. A temporal placing of a piece of jade does not mean the same as the assignment of a ceramic type or trait to some level; all it gives us on the jade is a possible cut-off date for the type. Olmec jade figurines provide a neat example of difficulties of this sort that one may encounter. The objects are of course readily recognizable from the stylistic standpoint. Present evidence suggests the period, or at least principal period, of their manufacture was the Pre-Classic Middle Tres Zapotes-La Venta horizon (a prolonged Urban Formative phase immediately preceding the Classic Upper Tres Zapotes). Yet a few objects of this type occur in the cache at Cerro de las Mesas, presumably traded from the nearby Olmec region, in a period believed on other grounds to have been roughly contemporary with Upper Tres Zapotes. Consequently, if these various suppositions are correct, the objects had been made quite some time before they were buried under the steps at the front of the mound. They were kept pretty carefully, too, all this time, for they have no nicks or other signs of rough use. The Cerro de las Mesas data by themselves would mislead us entirely. As a matter of fact, the basis for the belief that the

Middle Tres Zapotes-La Venta period was the one in which the objects were made derives mainly from their occurrence plus their close stylistic kinship with the monumental sculpture at the one-period site of La Venta.

The several hundred specimens in the cache include a considerable number made of what appeared to be one or another variety of jadeite, or blends of jadeite and albite, all of which I designate "jade," using the term in its loosest sense. However, I may easily have classed as "jade" a number of materials really quite different mineralogically. The second most abundant material is a soft, dull-surfaced tan to buff stone with lustrous streaks or areas of white and green. A fairly sizable proportion of the small figurines and figurine heads, as well as of the beads, are of this material. It was surmised at first that this stone was decomposed or altered (burned) jadeite. However, Dr. Foshag, who saw color transparencies of these pieces, along with brief descriptions, suggests they are probably calcite with inclusions of quartz and chlorite. There are a few objects of serpentine, a small number that may be of chloromelanite, basalt, and what Foshag designates meta-diorite. It would be beyond the scope of this paper and my competence to attempt to discuss the varieties of jadeite represented in the collection from a mineralogical standpoint. Foshag's study of Mesoamerican jadeites and related materials, when available, should clarify a great many problems of both mineralogical and cultural import.

FIGURINES

The figurines from the cache are quite varied stylistically. Only a few of them can be assigned to known art styles. In another way also they form a rather heterogeneous lot, for some of them are perforated for suspension either as pendants or beads. However, it seems preferable to describe all the objects which have been carved into representative forms together, no matter for what purpose they may have been designed, since after all we can only speculate as to the function of many of these objects.

Olmec figurines.—Two of the figurines in the lot are very obviously Olmec in style and a third, a figurine head, probably belongs to the same school of art. The first of these is a small figurine carved in the full round of translucent bluish-gray jade (pl. 27). It is almost uniform in color with no mottling. It stands 12.1 cm. high, its maximum width is 7.6 cm., and maximum thickness (back to extended hands), 4.4 cm. In every respect the treatment is typically Olmec. Head-and-face outline is characteristically rectangular with elongated flat-topped head and heavy, squarish jowls. In profile, deformation of the head is clearly indicated. The eyes are elongated blunt ellipses formed by drilling a series of contiguous holes with a small solid drill. Presumably they were intended to contain inlays as did the eyes of certain figurines from La Venta. Nose and mouth are framed by a continuous line that extends from the sides of the broad nose to the corners of the mouth. The nostrils are represented by two connecting conical pits. The everted upper lip is directly below the nose; the corners of the mouth are marked by drilled pits. Ears are typically elongated ridges at the sides of the head, quite simplified, and are perforated with connecting conical drill pits. The body conforms to the usual Olmec stylistic standards combining both realism and considerable simplification. The principal muscular masses on the shoulders, chest, back, and thighs are plainly shown. The limbs are disproportionately short. The hands and feet have been simplified to blunt, rounded forms with grooves marking off the fingers and toes. The general proportions of head and body suggest that it may have been intended to represent an infant. In many respects this is an outstanding product of Olmec art.

The second Olmec figurine is a small standing figure of pale yellowish-green serpentine with black inclusions (pl. 28, *a*). The figure portrayed apparently is that of a hunchback, although viewed from certain angles it looks as though it may represent a man carrying a load on his back. The over-all height of the figure is 7.0 cm. Like the preceding, the Olmec stylistic characters of the carving are most obvious. It differs from the first figurine in that the eyes are shallow, sawed semilenticular grooves. They were apparently not intended to hold inlays. Vertical lines connect the sides of the nose and the edges of the mouth. Two intersecting conical perforations form the nostrils and two more drilled pits mark the corners of the mouth, separating the heavy, squarish upper lip, which begins just below the nose, from the lower lip. The head outline is elongated with squarish heavy jowls. The ears are elongated, simplified to rectangular form, and have biconical perforations through the lower tips. The arms, hands, legs, and feet are simplified. The surface of the stone of which the figurine is made is only moderately polished. It will be recalled that the series of figurines from La Venta included a number of serpentine and similar soft stones, as well as those of jade.

The third object, one which is less certainly of Olmec style is one in the form of a small skull of light gray-green opaque jade, finished with a moderately high polish (pl. 28, *b*). The specimen, although very highly stylized, very obviously represents a human skull. One suspects that the theme may have been suggested by the original form of the stone, and the design was adapted to utilize this original form to the maximum. This, if true, is quite unusual in Olmec art, at least in the examples currently recognized as pertaining to that style. The eye sockets are represented by two very shallow round-bottomed, drilled pits. A pair of wide shallow grooves diverge from the base of the rounded lump that represents the nose, swing in wide regular curves up the sides of the head, and end in short spirals just over the eyes. The mouth is indicated as a lenticular area formed by shallow sawed grooves, bisected by a similar sawed line and crossed by five vertical lines to indicate teeth. The back of the object is a smooth vertical surface. Two gradually tapering perforations near the rear of the upper portion of the head intersect, presumably for suspension, and another pair of conical perforations, one from the under side of the chin and one from the back, also intersect to provide another suspension point. The reasons for suggesting that this piece may be of Olmec origin are: (1) The bold simplicity of style; (2) the type of jade, which resembles some of that from La Venta; and (3) the fact that a few examples of representations of skulls, both in pottery and carved of rock crystal, have been found at La Venta itself. The over-all height of the object is 7.3 cm., maximum width 4.2 cm.

Zapotecan (?) *figurine plaque.*—A small flat specimen, which might actually be classed as a plaque rather than a figurine except that it is not provided with perforations for suspension, is carved with a figure stylistically very similar to the "Danzante" figures of Monte Albán (pl. 29 and fig. 2). The material of which it is made is opaque medium-green jade with olive-brown spots. The object is 9.2 cm. in length, 5.9 cm. in width, and 1.0 cm. thick. The face of the object bearing the carving is very highly polished but not flat, having a slight concavity in its lower half. The back is unworked and unpolished. The figure is formed by sawed lines, cut in asymmetrically, that is to say, the cuts are not vertical, but have a steep face bordering the area outlined with a longer flatter slope away from the emphasized area, as though the sawing had been done at a slant. The personage is portrayed in a posture suggesting violent movement, with head thrown back and legs doubled up under him. The eye is formed by a shallow, broad drill pit. The nose and mouth shown in profile lack the framing lines and heavy everted upper lip of the Olmec style. There is a small shallow drill pit at the corner of the mouth. The personage wears an elaborate earplug with a flowerlike pendant, as well as a belt and breechclout. Swirling spirals on the head suggest an elaborate hairdress. The whole concept of the figure reminds one very strongly of the aforementioned Danzante figures, particularly in the strength of depiction combined with the rather rubbery-looking, impossibly jointed limbs. Despite the anatomical disproportion and poor drawing, the figure gives the impression of a very sophisticated style. On the back of the object at a point just below the back of the head a small drill pit was begun, but not put completely through.

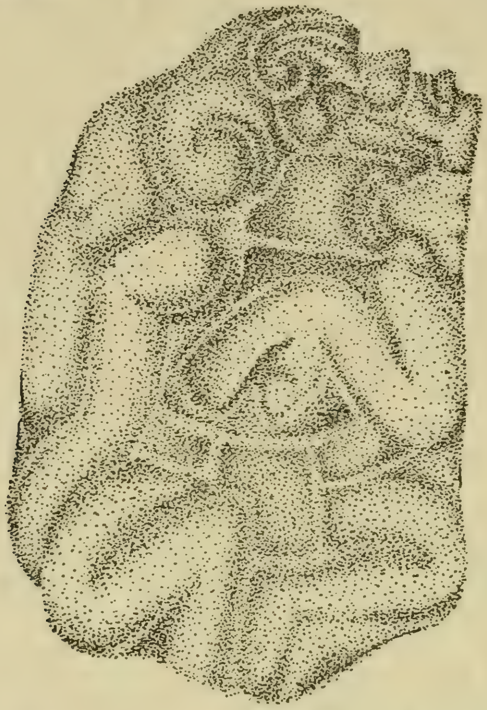

FIGURE 2.—Zapotecan (?) style figurine plaque.

Figurines of "crossed-arm style."—Two pieces in the cache, while not too similar stylistically, are interesting because of their resemblances to the figures with crossed arms described by Thompson from the El Baul region of Guatemala, and a fragmentary shell figurine from Nebaj (Thompson, 1948; and Smith and Kidder, 1951, fig. 19, c). The first was a rather large, somewhat crude figure of diorite (?) which was found lying on top of the objects of jade (pl. 30). It is the one referred to as a "monkey figure" in my report on the ceramics of the site (Drucker, 1943, pl. 58, *c*). It strikes one as being rather crudely made, the eyes being simply deep hollows apparently pecked out, the nose a flattish triangle, and the mouth an ellipse from which the center had been pecked out. On the back of the head a hairdress is suggested. The arms shown crossed over the breast are simply long flat strips set out by cutting away the material immediately adjoining. The sexual organs are indicated, an unusual feature in any of the regional art styles. The whole figure is angular and poorly proportioned. The feet merge into a rounded block of stone, which suggests that the object was either unfinished or else intended to be embedded in some plastic material as an architectural ornament. The figure is approximately 40.5 cm. high. The surface of the stone is rather rough; no attempt was made to smooth or polish it.

The second object of this general style is a small jade figurine just under 6.0 cm. long (pl. 31, *f*). The material is a light gray-green. The back is irregular and only moderately polished. The figure is indicated by a series of sawed lines which have been given slight relief by the cutting away of adjacent areas. The eyes are ellipses transected by horizontal sawed slits. The nose and mouth are formed by a large triangle extending from between the eyes to the base of the face, two transverse lines representing the base of the nose and the mouth. The arms are crossed over the breast. Three fingers are indicated on each hand by sawed grooves. At the base of the figure, a transverse sawed line seems to indicate the bottom of a kilt or skirt. The feet are simply indicated. A transverse perforation made by two intersecting gently tapering drill holes, goes through the neck of the figure from side to side. It was obviously drilled before the lateral notches were cut in at the base of the head to separate head and shoulders. It may be that this object originally had a different form and was reworked into the figurine. Two pairs of intersecting conical perforations, one pair at the side and back of the head and the other at about the waist on the right-hand side of the figure, provide additional means of suspension.

I am by no means certain that these rather crudely portrayed figurines with the similar posture actually have any significant relationship, but the possibility that they may have should not be overlooked.

Unclassified figurines.—There are a considerable number of figurines and figurine heads from the cache which as yet cannot be classified as belonging to any specific local style or time horizon. It is to be hoped that eventually some may be culturally identified. For the present they will be described and tentatively grouped on certain arbitrarily selected stylistic traits, which perhaps may turn out to have regional and/or temporal significance. The first such group will be one characterized by the use of relatively high relief for depicting some or all of the features. The first such figure is a rather large specimen 22.0 cm. high, of a light greenish-gray stone mottled with white, probably meta-diorite (pl. 32). It represents an individual in a standing posture wearing an elaborate necklace and ornamented belt and breechclout, with long hair hanging down the back. The eyes are long elliptical slits made by drilling a series of contiguous holes with a small hollow drill and breaking out the intervening partitions.

The form of the eyes suggests that they might have been intended for the insertion of inlays of other materials, as were the eyes of many Olmec figurines. The other facial features show a fair degree of realism. The large nose is boldly carved, the ears are simplified vertical strips at the lower ends of which elaborate earspools are indicated by double hollow drilling. The mouth is a wide shallow ellipse, the corners of which are marked by hollow drill pits. The necklace is indicated by a series of circles made with a fairly large hollow drill and ends in a large rectangular pendant on the figure's chest. The belt ornament is a wide rectangle with rounded corners and a hollow drilled circle at its center. The belt, breechclout, and the figure's long hair are indicated by parallel sawed lines. The body and limbs of the figurine are much simplified in treatment. In many respects this figure seems vaguely reminiscent of the Olmec style, but specific details of treatment make clear that it does not belong to that style. For example, the forehead, nose, and mouth, and particularly the space between the nose and upper lip are non-Olmec. The degree of simplification of body and limbs is much greater in Olmec figurines and significant detail of muscular masses is suppressed, and, finally, the use of the hollow drill is, so far as known, not to be found in Olmec art.

Another fairly large figurine, not of jade but of a dark-green stone with black streaks, possibly chloromelanite, is stylistically somewhat different, but is done in a fairly bold relief (pl. 33). The face is surmounted by a headdress in the form of the muzzle of some animal. The eyes are large pyriform depressions in which no traces of drill pits remain. The earspools are large incised circles with pits made by a small hollow drill at their centers. The nose and mouth are fairly realistically carved although the four teeth shown between the partly opened lips are disproportionately large. The body of the figurine has been so much simplified as to lack most anatomical detail. The hands which meet over the person's belly appear to be holding some object. The fingers and toes are marked with short sawed lines. The lines separating the upper arms from the sides and separating the legs are made by broad shallow sawed lines rounded off by subsequent polishing. In profile the body is quite flat, and in low relief. The figurine stands 20.4 cm. high, 6.7 cm. wide, and has a maximum thickness of 2.7 cm.

Another object in which fairly high relief was used by the carver is a little head of a brownish material containing streaks of dark and medium green, probably calcite with quartz and chlorite (pl. 31, *g*). The outline of head and face is that of an inverted triangle with heavily rounded corners and a slight notch at the top of the head. Raised masses at the two corners of the head suggest simplification of the headdress. The eyes are fairly large circles formed with a hollow drill, and give a staring owlish effect. The nose was laid out by sawing a triangle with its base at the mouth, its apex between the eyes. It was then carved into a high arched beaklike form. The corners of the mouth were marked by pits made by a small solid drill and connected by sawed lines. In profile the head has a bulging forehead, a deep, wide, sawed groove across the region of the eyes and the jutting beaklike nose previously mentioned. Two sets of intersecting conical perforations drilled from the sides and the back of the head provide points of suspension, one at either side. The height of the head is 4.2 cm., maximum width 3.3 cm., maximum thickness 1.6 cm.

Another category of figurines and figurine heads, all decorated with flat low relief appears to include two stylistic groups or subgroups, but whether these possible stylistic differences have real significance as to time or place of origin is unknown. In one of these styles the mouth and nose (rarely the nose alone) are represented by a simple flat triangle sawed out so that the apex is between or just below the eyes of the figure. The treatment of these features is reminiscent of that of the Teotihuacán type figurines from Monte Albán III (Caso, 1938, p. 9), except that the Cerro de las Mesas specimens entirely lack the strong relief of those from the highland, and might better be said to have been drawn rather than carved. In the other style the nose is formed by a continuation of the lines which encircle the eyes so that these lines descend downward and outward and are joined at the base by a horizontal saw cut, much in the fashion of the Early Classic jades from Nebaj (Smith and Kidder, 1951, pp. 33 ff.).

An example of the triangular nose and mouth style is one made from half of a large bead which was sawed through, leaving part of the biconical perforation clearly shown on its back (pl. 34, *g*). The features are indicated by a series of shallow sawed slits, two at each of the eyes. A sawed triangle with three horizontal cross lines represents the nose and mouth. It is possible that this specimen was just being laid out for more elaborate working and was not finished because the saw cuts are quite shallow. It is made of an opaque light gray-green jade, the front of which is moderately well polished and the sawed back only slightly less polished. Two biconical drill holes perforate the sides of the head near the top. In one of them the bridge at the edge of the perforation has been broken out. The length is 3.8 cm., width 2.9 cm., thickness 1.5 cm.

A quite similar specimen, the eyes of which are marked by three horizontal saw cuts and the nose and mouth once more by a triangle with transverse sawed lines at its base, is pierced transversely for suspension by two biconical drill holes which enter at either side near the top (pl. 34, *d*). A small notch at the center of the lower edge and two small notches on either side suggest that the object may have been reworked from some other form. Its over-all height is 4.5 cm., maximum width 3.2 cm., and thickness 1.2 cm.

Another figurine representing a complete figure is made from a dense black stone, possibly basalt, and was one of those in which the original form of the pebble was very slightly modified (pl. 35, *a*, *a′*). It represents a standing figure with the arms folded across the belly. A horizontal line sawed just above the face presumably marks the hairline. The eyes are each formed by a single horizontal sawed slit, the nose and mouth are formed by a triangle with transverse lines across the base to indicate the mouth parts. Some cursory saw lines seem to indicate the legs, the feet of which are little protuberances probably left from the original unworked form. The back is unworked except for transverse lines at point of neck and waist. The lower part of the figurine retains the original irregular surface that slopes away sharply toward the feet so that the figure cannot stand upright.

Another small standing figure, likewise of a dense black stone, possibly a fine-grained basalt, in a similar posture except that the hands appear to be holding something, gives a faint suggestion of Olmec influence in its treatment (pl. 35, *c*, *c′*). The eyes are two horizontal sawed slits but an attempt had been made to give a more realistic treatment by a slight modeling of the cheeks just under them. On the back of the figure sweeping sawed lines mark off arms, waist, and legs. Feet and hands are delineated in a highly simplified fashion. The length of the object is 9.5 cm., width 3.0 cm., maximum thickness 1.6 cm.

A third small standing figure representing much the same posture strikes one as being perhaps the crudest of the whole lot (pl. 35, *b*, *b′*). It is made out of a dense olive-green stone. Encircling sawed lines indicate the neck, the upper and lower edges of the folded arms, the waist, knees, and feet. The head is simply the rounded end of the original pebble, with two small drill pits for eyes and a triangle for nose and mouth. There is no indication of ears or earspools, or any modeling whatsoever. The hands are separated by two slanting sawed lines, and fingers are represented by horizontal sawed lines. Two deep notches sawed vertically from either side mark off the legs. The length is 6.2 cm., width 2.7 cm., thickness 2.1 cm. There are no perforations for suspension or attachment.

A small head perforated at the upper end by connecting transverse conical drill holes also has mouth and nose made by a sawed-out triangle with three transverse saw cuts at the lower edge to indicate base of nose, lips, and mouth (pl. 34, *h*). The eyes are sawed ellipses with wide sawed lines transversing them horizontally. The elongated oval pebble from which this head was made was otherwise slightly modified and is not polished. It is 4.9 cm. long, 2.6 cm. wide, 1.8 cm. maximum thickness.

A small flat pebble which appears to be olive-green serpentine is framed by a rectangular border made by sawed vertical lines on the sides and a horizontal one across the upper edge that seems to represent hair (pl. 34, *b*). The eyes and mouth are irregular ellipses set off by sawed lines; the nose is simply a flat triangle, set off by sawed lines. The height of this object is 2.8 cm., width 2.7 cm., and maximum thickness 0.7 cm.

Two small beads, one of which is a thick ellipse in outline but fairly regular in form, and the other of which is so irregular as to suggest a small pebble, as slightly worked as possible, have faces carved on them in essentially the same fashion as the preceding figurines (pl. 36, *b*, *b′*, *c*, *c′*). The one of regular shape has elliptical eyes and two joining arcs that suggest eyebrows. The nose and mouth are formed by a triangle, the sides of which do not quite meet at the top. Two large abruptly tapered perforations transect the object from side to side, joining at or near the middle. The maximum height of this object is 2.5 cm., maximum width at perforations is 2.1 cm., thickness is 1.7 cm. The smaller irregularly shaped bead has eyes indicated by three slightly slanting parallel sawed lines on either side of the triangular nose. A saw cut at the lower edge is connected with a drilled hole from the rear of the object.

A very flat figurine head of mottled brown and bluish material is approximately rectangular with rounded corners in outline (pl. 34, *c*). The face is framed by a sawed line. The sides and top on the outside of the sawed line are cut by short saw lines to give the effect of either hair or a feather headdress. The eyes are irregularly shaped areas outlined by saw cuts and transversed by horizontal slits. The nose and mouth are formed by a single triangle, as described above. Two roughly made ellipses with drill pits at their centers indicate earspools. Three perforations from front to back were made with conical drills and provide means of suspension or attachment. The dimensions of this object are height 4.1 cm., width 4.5 cm., thickness 0.9 cm.

A small flat irregular fragment of jade was slightly modified by means of a few saw cuts into a small figurine (pl. 34, *f*). Two round raised areas accentuated by saw cuts form the eyes. The nose was laid out in the form of a triangle. The mouth is an irregular ellipse with a small drill pit at the center. Shallow sawed lines appear to be meant to indicate the arms, waist, and feet. A sort of round tab projects from one side and it has been notched at its edge by three saw cuts. A biconical perforation penetrates from front to rear alongside the head on the winglike side, and two drilled holes intersect from the other edge and back. The height of this object is 7.0 cm., maximum width 3.3 cm., and the thickness varies from 0.3 cm. to 0.8 cm. In profile it is quite irregular.

Another small head distinguished by the use of hollow drill work is of opaque dark-green jade, highly polished on its convex front surface and moderately polished on its flat back (pl. 31, *c*). The outline is oval, the top being the wider end. The features are marked by a series of sawed lines for the most part. Hair or hairdress is indicated by angular U-shaped figure. The eyes are shallow oval pits whose lower margins are accentuated by arcs, apparently made with a hollow drill, that give an effect reminiscent of representations of Xipe. This, incidentally, is the only figurine of the triangular nose-mouth style to show evidence of the use of the hollow drill. The nose and mouth are formed by a triangle sawed out so that its apex lies between the eyes and its lower margin is transversed by three sawed lines which mark the base of the nose and the two lips. Three pairs of intersecting conical perforations, two at the sides of the head above the level of the eyes and one at the base of the chin, provide points of suspension or attachment. This object, although much simplified in treatment, differs from the others just described in giving an impression of excellent workmanship and sophistication of concept rather than crudity. The over-all height of the object is 4.7 cm., width 3.4 cm., maximum thickness 1.7 cm.

There are a smaller number of figurines of the second style, in which each line across the tops of the eyes is extended downward to outline one side of the nose, the two lines joining to form a single continuous one.

A small flat piece of pale-green jade, roughly rectangular with round corners and outline, has roughly elliptical sawed lines to represent the eyes (pl. 31, *a*). The nose is formed by an extension downward and outward of the outlines of the eyes, and the mouth is encircled with an ellipse. Transverse lines cross the eyes and the mouth. Vertical sawed lines at the top appear to indicate hair. Three small biconical perforations, one at either side and one a little bit off center below the mouth, pierce the object from front to rear. The height is 2.7 cm., width 2.9 cm., and the thickness 0.6 cm.

There are two examples of figurine heads with slightly more realistically depicted noses, though in both cases in the same general fashion, by extending the lines about the eyes. One of these is a flat slightly irregular fragment of pale grayish-green mottled jade (pl. 31, *b*). The face is framed by sawed lines which join at the top to form a rough rectangle. Various curving saw cuts around the edge indicate an elaborate headdress. The eyes are encircled by sawed lines and transected by horizontal sawed grooves. The bridge of the nose is formed by extending the lines around the eyes downward and slightly inward. Near the bottom small semicircles have been sawed out to suggest wide flaring nostrils. The form thus suggests the "T-shaped" noses of certain Early Classic Nebaj jades. The mouth is sawed out and almost rectangular in form, a biconical perforation piercing it from back and front. Two small perforations at the sides intersect with two from the back. One of these side suspension points is broken out. The height of the object is 2.6 cm., maximum width 4.5 cm., and thickness 0.3 cm.

The other figurine with well-defined nostrils was made by a piece of calcite (?) (pl. 31, *e*). It seems to have a fairly elaborate headdress, although one side of the head has been broken off. The eyes, as in the preceding example, are roughly sawed ellipses. The nose is made by continuing the lines around the eyes downward and inward and near their base the wide alae are carved out somewhat irregularly. Some sawed lines below the face suggest an elaborate necklace. Other sawed lines suggest a belt and legs. The feet of the figurine are broken off. The front side retains a medium polish; the back is smooth but not polished. It shows the remnants of two sawed planes cut from opposite directions to leave a small septum which has broken off. The present height of the object is 6.6 cm., maximum width 3.1 cm., and thickness is 0.4 cm.

A small head made of a thin flat fragment of calcite (?) with white and green inclusions, has most of its features indicated by curving sawed lines (pl. 31, *d*). The nose is outlined by a continuation of the lines which curve around the eyes and are then brought down to meet the sawed line separating the mouth from the straight bottom of the nose. The eyes themselves are irregular ellipses outlined by sawed lines, and each transversed by a single sawed line. The mouth is represented by a similar sort of ellipse. The face is framed by a raised band left around it, broken at several points by lines which appear to indicate hairdress and earspools, and a profile face in the upper left corner, easier to see in the photograph than on the actual specimen. The earspools are marked by circles cut with a hollow drill. Three small semicircles, apparently made by applying a hollow drill at an angle less than 90° to the surface of the stone, occur at three points on the raised band. Two perforations near the upper end of the head and formed by intersecting conical perforations drilled from sides and back provide means of suspension. The object has a maximum height of 3.6 cm., width of 3.3 cm., and maximum thickness which varies a little over the entire object of 0.7 cm. The back of the head and face are neither polished nor decorated.

A small irregular pebble of mottled light and medium green jade is similar to the preceding in that most of the features have been set out by sawed lines and a hollow drill has been used at certain points (pl. 34, *a*). The object has been made from a small pebble apparently little modified from its original form except for the fact that it has been sawed down one side. The face itself is framed by a more or less angular raised band marked by sawed lines. At top center five short vertical sawed lines appear to indicate hair or some sort of hair ornament. The eyes, as in the preceding head, are very irregular ellipses with horizontal sawed lines across their centers. Similarly, the nose is indicated by continuing the sawed lines that encircle the eyes downward and outward and joining them at the bottom by a transverse sawed line. The mouth is an irregular ellipse. The separation between the lips is marked by a short arc which may have been made with a hollow drill, and the lower lip is set off with a similar short arc. The earspools are circles made by a hollow drill with shallow single perforations at or near their centers. Two perforations at the upper end are formed by intersecting pairs of conical drill pits put through from back and sides and at the bottom tip a connecting biconical perforation was drilled through from front and back. This rather crudely made little piece has a fair degree of polish on its front surface. It has a maximum height of 4.7 cm., width of 3.6 cm., and a maximum thickness of 1.8 cm.

Another small figurine which shows not only the head but a complete if somewhat stunted figure, made of an unidentified olive-green and buff stone, is shown standing with the hands brought together across the belly (pl. 34, *e*). The eyes are delineated by sawed ellipses, none too regular in form, and horizontal slits sawed across the middle. The nose was made by continuing the lines encircling the eyes downward and outward and ends abruptly in a horizontal sawed line. The corners of the mouth are marked off with arcs made by using a hollow drill at a slanting angle. Similarly made arcs represent the shoulders and two more outline one of the hands whose fingers are represented by two horizontal saw cuts. A slight raised area on top of the head suggests a topknot and the face is framed by a sawed line. Conical perforations are drilled in from the sides of the neck and intersect with similar pits drilled in from the rear. Aside from these suspension holes the back is not worked. The stubby legs are indicated by sawed arcs and a sawed notch separates the feet. The height of this object is 4.3 cm., width 2.6 cm., and maximum thickness 1.4 cm.

The remaining figurines and figurine heads are all rather aberrant among the materials from the cache. One is a head or face that looks as though it may have been broken from the complete figurine, since the back is rough and rather battered (pl. 36, *d*). It is made of a very dark green stone which is probably not jade. The eyes are formed by slightly raised areas ringed by two shallow ellipses. The nose was laid out as a triangle and shaped in rather high relief, tapering from the sides to a rather narrow crest or bridge. The mouth has shallow drill pits at the corners and is somewhat squarish in outline, suggesting possible Olmec influence. The cheek bones and cheeks are well modeled in low relief. Under the rounded chin there is a slight recess to indicate the neck which continues up as a groove along the sides of the face to the top of the head. Intersecting conical pits were drilled from sides and back. The present height of this object is 5.3 cm., maximum width 4.0 cm., thickness 2.5 cm.

A very crude little object made of a compact dark olive-brown stone has what may be interpreted as a highly stylized face at one end, almost directly over two short stubby legs (pl. 37, *c*, *c′*). Three horizontal lines, one close to the top, one about the middle, and one just above the stubby "legs," are cut into the object. At the upper end just below the uppermost line, two moderately deep horizontal cuts appear to represent the eyes, and between and below them is a raised triangular area which suggests the nose. The surface of the stone alongside and below the nose has been cut away nearly to the edge, leaving a narrow border, perhaps to represent hair, along either side. The back of the figure is unworked except for the central encircling line which continues all around. The length is 5.2 cm., width 3.5 cm., and thickness 2.0 cm.

A small flat piece of jade, medium grayish green in color with white mottling, was worked into a simple little figure suggesting a human form in profile (pl. 36, *a*). A sawed line ending in deep notches on either edge represents the neck of the figure. A short distance above that a deeply sawed notch suggests the mouth and a series of shallower saw cuts from the edge apparently are meant to indicate the base of the nose and the eye sockets. A shallow drill pit represents the eye. A transverse line sawed across farther down the body of the figurine represents the waist and a little notch on the bottom suggests that the figure is intended to be shown in a kneeling or squatting posture. The obverse is plain but polished. There are no perforations. The over-all length is 8.3 cm., maximum width 3.1 cm., thickness 0.7 cm.

A fragment of very bright green jade with a medium polish represents a foot and looks as though it may have been broken from a large fairly elaborate specimen (pl. 37, *d*, *d′*). Viewed from above, it is nearly rectangular in outline with slight constrictions toward the heel. Three sawed lines at the tapered toe represent the four toes. These lines are continued on the underside. Transverse sawed lines mark off the areas of the sole of the foot. The craftsman apparently made one peculiar error, for a high area that presumably was meant to represent the ball of the foot is immediately adjacent to the heel and a depression was carved out, for what should be the instep, between the toes and the raised area. The length of the object is 4.6 cm., width 2.0 cm., thickness (to the edge of the break) 0.9 cm.

A few pieces in the collection appear to have been intended to represent animal forms. One interesting specimen is made of serpentine in the form of a small fish (pl. 37, *a*, *b*, *a′*, *b′*). The eyes are formed by moderately deep circles cut with a hollow drill. Sawed lines at the edges of the mouth and around the gills give the object a more realistic appearance although actually it is highly stylized. It is drilled from end to end, that is, from mouth to tail, by means of two tubular drill holes which intersected just over 6 cm. from the mouth, or roughly two-thirds of the way back. These holes are about 1 cm. in diameter and have a very slight taper toward the base, presumably due to added wear during the drilling process at the upper part of each shaft. The holes almost fail to meet, having an overlap of about half a centimeter. Subsequently the object was sawed in half longitudinally. Whether this was done because the drill holes did not meet properly cannot be determined. The object is 9.1 cm. long and 4.7 cm. in maximum width. The original thickness prior to sawing was apparently a little under 2 cm.

A small piece of pale-green jade was made by cutting what must have been a fairly good-sized cylindrical bead in half longitudinally (pl. 37, *e*, *e′*). The remaining piece is slightly less than a half cylinder in cross section. The lower end was broken off and repolished. A few shallow saw marks outline slanting elliptical eyes, the line across the muzzle, and what seems to be an indication of nostrils at the lower broken end. The top two biconical perforations, one on the face side, provide means of suspension and are connected by a sawed groove. The general effect is that of an animal head, but it is impossible to try to guess the species represented. The present length of the object is 5.1 cm., the width is 1.8 cm., and the thickness 0.8 cm.

A small buff-colored pebble, probably of serpentine, was slightly modified into the form of an animal head, possibly that of a dog (pl. 49, *h*). Shallow drilled pits indicate the eyes. A transverse biconical perforation runs from side to side at the base of the ears and another perforation goes through the lower lip and into the saw cut that represents the mouth. The length is 5.4 cm.

A small carving representing a fairly realistic turtle, made, as I recall, of basalt or possibly diorite, and painted red, was found in the offering, but I did not find it with the collection in the Museo Nacional, and by some strange oversight no pictures of it seem to have been made in 1941.

Two small representative objects of materials found with burial materials in Mound 30 may be added to our list, although they do not properly belong with the cache. One of these was a small carving, possibly made from half of a subspherical bead, representing a monkey head (pl. 52, *a*, third row, middle). It has the characteristic wide crest on the head and protruding mouth parts. The eyes are small shallow drill pits. A transverse perforation runs through from side to side near the top of the head and two pairs of intersecting conical perforations connect sides and back just below the midpoint. The height of the object is 1.8 cm., the maximum width is 1.8 cm., and the thickness is 1.3 cm.

The second little jade pendant from Mound 30 represents a highly stylized cicada (pl. 52, *a*, third row, middle). It is of bright-green jade with light-green mottling. In outline it is nearly elliptical with slight notches at the sides of the head and the base of the wings. Shallow saw cuts suggest the thorax of the insect, and two very shallow drill pits near the upper rounded end, the eyes. A transverse biconical perforation pierces the object from side to side at about the level of the eyes. This little piece is well polished. Its length is 3.1 cm., the maximum width is 1.6 cm., and the thickness at the upper end is 1.0 cm.

A little pebble of light-green jade was very slightly modified into a form that vaguely suggests the head of a wood duck (pl. 49, *h*). A slight projection at one end was bisected with a saw cut to suggest the beak, and a few light cuts on the other end suggest the feathers. A transverse biconical perforation runs through from side to side. The length is 2.9 cm., the width 1.8 cm., and the thickness 1.2 cm.

PLAQUES

There are a number of objects among the materials from the cache whose use is not known but which suggest by their more or less flat form and laterally balanced perforations that they were intended for suspension, perhaps hanging from necklaces like some of the objects portrayed on the various stelae. These pieces are grouped here as "plaques."

The first of the plaques is a small trapezoidal object of very light translucent green jade with a faint mottling of light green and white (pl. 38, *a*, *a′*, and fig. 3). The two upper corners are decorated with highly simplified animal heads in profile, formed by a very few sawed lines and with circular depressions made by a hollow drill to represent the eyes. The sides and lower edge of the stone is marked off with a border formed by a lightly sawed line. The central portion between the heads is also decorated with an angular pattern of sawed lines.

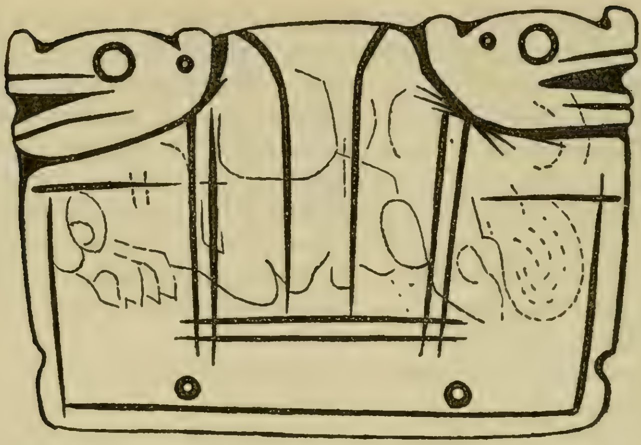

Figure 3.—Original design on plaque shown in plate 38, *a*, *a′*.

Four perforations equally spaced, two at the top and two at the bottom, provide means for suspension or attachment. These perforations are biconical, drilled through from front and back. The front of the object, that is the side bearing the design, is well polished. The undecorated back has only a medium polish. This piece appears to have been a fragment of a larger plaque, the original design of which was ground down when the object was given its present form. Faint traces remain of an engraved face which was almost entirely removed in the reworking. This face is too faintly delineated to be photographed, in fact it is very difficult to see at all except in just the right light. Stylistically this previous engraving seems to have a strong Mayoid flavor. Figure 3, from a drawing made by Covarrubias, brings out this character clearly. It may be noted also that several indentations along the edges of the plaque appear to be remnants of perforations originally drilled for suspension or attachment of the object. The piece measures 8.4 cm. along the top and 7.4 cm. along the bottom; one side, that on the viewer's right, is 5.6 cm. long, and the other side is 5.3 cm. In cross section the object is a narrow ellipse, 0.75 cm. being the maximum thickness.

A second plaque is a narrow flat object of medium dark-green jade (?) with flecks of light green (pl. 40, *c*, *c′* and fig. 4). It is decorated on both sides and the outline has been slightly modified into a form suggesting a conventionalized fish of some sort. On one side the decoration has been applied by means of sawed lines, the margins of which are more nearly vertical on one side than on the other, which serves to accentuate the particular area outlines. The figure has an irregular but almost round eye, and beginning below the eye a gaping mouth with up-curved snout. Curving lines behind the eye suggest gill openings. However, the head might be that of almost any stylized reptile or monster. Its identification as a fish is based on the abrupt breaks at top and bottom of the silhouette, a little more than two-thirds of the way back from the head, which give the effect of the ends of the dorsal and ventral fins of the fish, and the pair of protuberances at the very end which suggest the fish's tail. The surface of the object is fairly flat and the edges are rounded off rather sharply. On the opposite side is a lightly but accurately engraved design which may also represent some sort of fish. This pattern is turned just the opposite way to the more heavily carved pattern on the other side, that is, the belly of this fish lies on the same edge of the plaque as the back of the other one. The upper edge as seen from this view (or the lower edge in relation to the other side) is pierced by two biconical perforations situated one on and one just inside of a sawed line along one edge of the figure. This specimen, like the preceding, may perhaps be a reworked fragment of some much larger object. The maximum length of the specimen is 13.9 cm., the maximum width is 4.8 cm., and the maximum thickness is 0.7 cm.

A small object carved in the form of a dugout canoe is included among the plaques because on its base it has a set of four biconical perforations drilled through from base and sides to intersect, thus

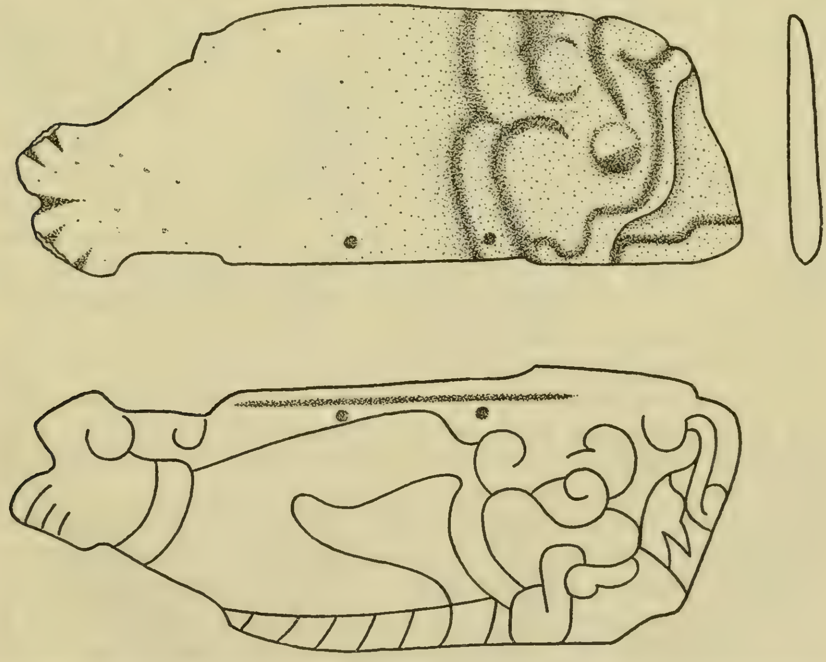

FIGURE 4.—Two sides showing incised designs of fish plaque. Cross section through head of plaque.

providing a means of suspension or attachment (pl. 38, *b*, *b′*, *b″*). The object is made of translucent dark-green jade with a strong bluish-gray cast. The stone appears very similar to that from which the Olmec figurine was made. The "canoe" is roughly rectangular in plan viewed from above. The platformlike ends are of the same width as the central part of the object but are relatively thin, then merge abruptly into the "hull." It is worth noting that real dugout canoes in use today in many parts of southern Veracruz are made with very similar wide flat projecting bow and stern. The central part of the canoe is hollowed out into a roughly rectangular depression. The flat projecting bow and stern bear between the margins formed by extension of the gunwales engraved patterns which are beyond a doubt conventionalizations of the Olmec Jaguar-monster (fig. 5). The eyes in each case slope toward the center and have the form of narrow ellipses containing small circles to represent the pupils. A pronounced V-shaped notch has been cut from the upper edge and has its apex almost between the eyes. The mouth of each of these heads has a raised angular upper lip bordered on its lower side by a line to represent teeth and fangs, and finished off at the bottom with a characterized lower lip whose outline parallels that of the upper lip. As indicated, the two heads are as nearly identical as freehand drawings can be. It may be entirely fortuitous, but the Olmec figurine previously mentioned is of just the right width so that its feet fit snugly into the "canoe" and it stands up very solidly in the little vessel. Whether these two pieces were actually made to fit together or not, the stylistic features of the sharp clean engraving on the canoe indicate that it is of the same art style as the figurine. The upper surface and sides are highly polished. The base is smoothed but not polished. The specimen has a maximum length of 20 cm. and a maximum width across the gunwales of 5.6 cm. The flat bottom of the "hull" is 10.4 cm. long by 5.0 cm. wide and has a depth of 2.3 cm. on one side and 2.35 cm. on the other. One of the projecting ends is not quite level, rising to a height of 2.5 cm. on one side at the end.

Another vessellike object of jade is in form almost rectangular with rounded corners, though there is a very slight taper toward the ends. It is of medium-green jade and well polished front and back. One side of the specimen is hollowed out into a shallow ellipse approximately 0.6 cm. deep. A biconical perforation at one end just outside the margin of the excavated area and the other at the midpoint of one side just within the excavated area apparently were intended for suspension. The back of the object has two old partly ground down saw cuts transversed to the main axis of the piece. The specimen is 15.9 cm. long, 8.0 cm. in maximum width, and 1.1 cm. in maximum thickness. The face or excavated portion appears to have been quite

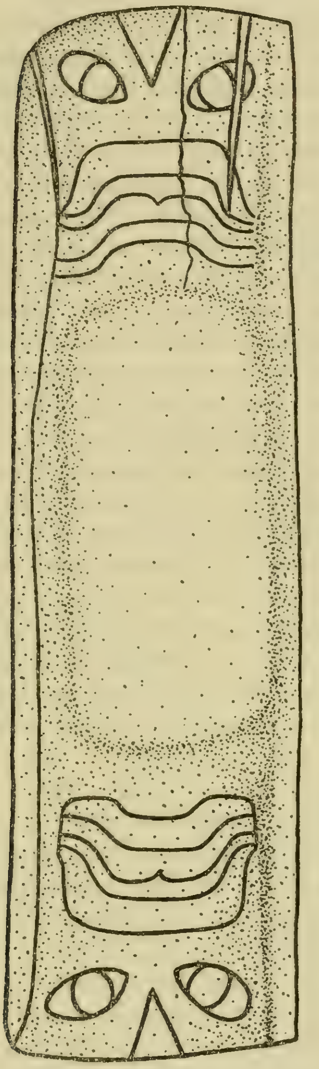

FIGURE 5.—Jaguar-monster designs on "canoe" plaque.

flat prior to the hollowing out of the depression. The back is regularly convex.

A large flattish perforated object suggests in its form that it is a part of an ornament or shallow vessel of some sort whose original form was intended to be that of a clamshell (pl. 40, *a*, *a′*). One end of the specimen is rounded off with a fairly regular arc; the other end has been sawed off, the cut being made from both sides until only a narrow septum remained which was snapped off. Upper and lower edges are worked into gently rounded borders of varying width. One of these borders widens rapidly near the sawed off edge, apparently to indicate the hinge of a shell of a clam. Lightly sawed lines along and across this border serve to accentuate the hinge. In cross section the object again simulates the form of a clamshell, being hollowed out at a more abrupt angle on the hinge side, raising through a more gentle curve toward the lip edge. The back of the object curves abruptly at the edges and flattens out into two longitudinal planes formed by two original saw cuts which did not quite center on each other. A number of perforations were drilled through the object. Two perforations close to the edges about two-fifths of the way from the rounded tip were drilled through from front to back. A third perforation in the center of the sawed edge is formed by a pit drilled from the concave face which intersects one drilled from the edge. Two more perforations occur on the concave side of the object and are formed by pairs of intersecting conical pits drilled from edge and back. The jade from which this object is made is medium green in color with a grayish cast and is mottled and streaked with light and dark grayish-green areas. The piece has a maximum length of 19.6 cm., a width at the sawed edge of 10.0 cm., a maximum thickness of 1.7 cm., and the excavated portion has a maximum depth of 0.7 cm. This specimen is considerably larger and less well made than the jade plaque in the form of a clamshell from the columnar basalt tomb at La Venta.

Another object which appears to be a fragment of a pendant in the form of a clamshell is shown in plate 36, *e*. It is made of opaque medium-green jade mottled with dark green and with areas having a brownish tinge. One side is quite flat from edge to edge and undecorated although it has quite a high polish. The other side has some very slight relief carving and a few lightly sawed grooves that appear to simulate the hinge portion of some clamshell. The outer and lower edge has been modified into at least four lobes. The upper edge on which the hinge is located is almost straight. The piece has been broken off just to one side of the hinge. On the right-hand edge almost at the juncture of the first and second lobes is a biconical perforation passing from side to side. The maximum length of the object is 6.8 cm., the maximum width (across the hinge) is 6.5 cm., and the maximum thickness is 1.1 cm.

Another plaque approaches in form a long narrow rectangle with rounded corners (pl. 40, *b*). Near the middle of the round axis it is slightly constricted, having a wide shallow saw cut across each edge. This constriction is accentuated by a sawed line across the face. In side view the object tapers very slightly toward one end which rounds off from both sides to a blunt edge. It thus vaguely suggests a celt in form, although celts from this part of Mexico are not normally so thin and flat. The end opposite the blade is perforated at the midpoint, a conical perforation from the edge intersecting another from the back. The perforated end is decorated with a very simple design consisting of two transverse sawed lines and four short longitudinal lines. Between the transverse lines are three circles, one of which is not quite complete, made with a hollow tubular drill. Two incomplete circles made in the same fashion are found on the blade-half of the piece. The undecorated back is less highly polished than the front. Near the blade end of the object is the remnant of a drill pit, indicating that the present specimen was sawed off a larger specimen or piece of jade. One edge also shows the remnants of a narrow septum between two saw cuts. The specimen is 16.0 cm. long by 5.2 cm. wide, with a maximum thickness of 1.3 cm.

Another object of very light green translucent jade with white mottling and streaks of medium-green color is rectangular in form with slightly rounded corners (pl. 48, *i*). The edges are fairly evenly squared off. Two biconical perforations 1.9 cm. apart at the approximate center of one of the long sides were made by drilling from the edge and one face. On the lower edge (assuming that the edge with the perforations would be the upper one when the object was suspended) are the remnants of the drill hole and some well-ground-down saw cuts. The object is moderately well polished over all. It is 9.1 cm. long by 3.0 cm. wide and has a maximum thickness of 0.7 cm.

EARSPOOLS

Among the materials studied there were a total of 36 large jade flares for earspools, and some fragments of others. The original inventory of the cache materials includes 12 more (including several fragmentary pieces) which were not accessible at the time of my visit, having been loaned to regional museums, etc. However, the 36 pieces available pretty well cover the entire range variation of types and subtypes.

Preliminary examination of materials indicates that more information must be assembled before we can work out an entirely adequate classification of earspool flares. The basic typology used here is that defined in the Kaminaljuyú report (Kidder, Jennings, and Shook, 1946). However, certain variant forms were found which have been classed as subtypes. It is not certain at present whether these subtypes are significant or not; that is to say, whether they actually have either a regional or temporal significance. For that reason the present classification is offered purely as a tentative one, pending the appearance of more typological studies from Mesoamerica.

It is worth commenting that a number of earspool flares from the cache, in fact a considerable number, are so large and heavy that I am inclined to doubt that they could have been actually worn in the ears. Several possibilities suggest themselves: they may have been worn in masks or headdresses; they may have been used to adorn large idols; they may have been a sort of symbolic treasure to be displayed in rituals; or they may have been deposited in the cache before they were actually finished. In a number of the pieces the necks are very roughly drilled out by means of heavy biconical perforations that just barely meet and which leave thick, heavy walls (see pl. 41, *d*, *e*). Most of these same specimens are polished only on the face of the flare, the back and necks being only smoothed, or at most, very slightly polished.

Type A flares, as defined by Kidder, Jennings, and Shook (1946) are "connected by a comparatively narrow face curving gently into a wide throat . . . face approximately circular in outline." There were 10 specimens of this type available, among which there was only one obvious pair (pls. 42, *a*, *g;* 44, *b*, *c*, *g*, *i*, *k;* 45, *a*, *b*). The face diameters of the eight unpaired pieces range from 3.8 cm. to 6.5 cm.; the necks tend to be proportionately longer than those of the other varieties of flares, six of the eight having a height/diameter ratio of 0.34 and above. Of course it is not impossible that this difference is only apparent in view of the small sample, for the other two flares of this type were definitely short and stubby with a height/diameter ratio of 0.18 in both cases. All but two of these flares (one of the short ones and one of the long ones) had two diametrically opposed perforations drilled through the necks. The only pair in this group have broad shallow designs sawed into the faces. The designs consist of four equally spaced pairs of concentric angular U-shaped figures (pl. 45, *a*, *b*). One is slightly larger, having a face diameter of 10.2 cm. This same piece has a longer stem, with two diametrically opposed perforations. The smaller piece looks as though its stem had been cut down just below the level of the perforations.

Type B earspool flares as defined by Kidder, Jennings, and Shook (1946) are those in which the "face is relatively wide and tending to be flat rather than curving, breaks abruptly into the neck with but little throat." Kaminaljuyú flares, on which this type is based, are also characterized by an extremely irregular facial outline. The goal seems to be the maximum utilization of colorful stone rather than any regularity of pattern. There is only one specimen from Cerro de las Mesas which conforms to all the characteristics of this type. A variation which we may designate tentatively Variant 1 of Type B has the same essential character of the wide, flattish face at right angles to the plane of the stem, but the outline of the face is approximately circular. This is the most numerous form in the lot of materials from the cache. There are 16 specimens of this variety, including 2 pairs (pls. 41, *a*, *b*, *d*, *e*; 42, *e*, *f*; 43, *d*, *e*, *f*; 44, *a*, *e*, *h*, *j*). The size range of this group in terms of face diameters varies from 4.1 to 10.4 cm., 11 of the pieces having a face diameter 6.9 cm. or larger. The height/diameter ratio ranges from 0.20 to 0.45 with a majority of the specimens being 0.34 or less. It is not entirely clear whether this ratio is actually significant, since some of the specimens show clear evidence of having been partly broken off and reground. Three of these pieces have no perforations in the necks, one has a single perforation, sawed through horizontally, and the rest have two diametrically opposed drilled perforations (except for one broken specimen in which only one drilled perforation remains).

A second variant, Variant 2 of Type B, is a similar form in which the outline of the face is rectangular with rounded corners (pls. 42, *b*, *c*; 43, *a*, *b*, *c*; 45, *d*). In a few instances the corners have been rounded off until the outline is very close to circular, and perhaps if we had a sufficiently large sample it might be found that this rectangular variant merges imperceptibly into the form with the circular face, and hence the two would have to be combined. In one case in the present series the facial outline is definitely elliptical rather than rectangular. There are 11 examples of this variant of Type B in the series studied. Included among these is a pair, obviously cut from the same piece of stone, which have imperforate throat disks, neatly cut and wedged into place (pl. 45, *d*). (The throat disk of one of these flares has come loose and is lost at present, but photographs taken at the time of the finding of the cache show it in place very clearly.) The facial dimensions of these specimens range from one measuring 5.6 by 5.2 cm. to a large badly broken example which originally must have measured about 10.6 by 11.8 cm. Aside from the one large flare from which the neck had been broken, all but one of the series had two diametrically opposed drilled perforations in the neck. All but one specimen had a height/diameter ratio of 0.34 or less, but since the necks of several specimens appear to have been broken off and reground, this ratio may not be particularly significant.

SMALL FLARES

The cache includes a few pieces similar in form to the earspool flares, but of markedly smaller size (pl. 46, *a–j*). It is impossible to say whether these were simply small earplugs or parts of earplugs, or whether they were parts of elaborate assemblages that went with the large flares in some fashion. There are 10 such specimens. Two of them are definitely a pair, being of very nearly the same size and almost certainly cut from the same stone. Each has a biconical perforation near the lip of the flare and both are much alike in general form. The disk diameter of both pieces is 3.4 cm. and both have an over-all height from face to stem of 0.9 cm. Another one of these objects has two pairs of diametrically opposed incisions in the rim of the flare. Its general proportions are about the same as those of the two preceding specimens. Only one of these small flares has two diametrically opposed drilled perforations in the stem. The general pattern suggests that the small flares were used differently from the large ones. The stems in all but three instances are proportionately much shorter than those of the large flares.

DISKS

There are several large disks of jade with a sizable central perforation. It is quite possible that these may have been backings for earspools although there is no direct evidence to corroborate this suggestion. One of the most elaborate is a specimen of light-green jade of approximately 8.4 cm. diameter with a central perforation of 4.9 cm. diameter (measurements derived from comparison with specimen of known size in same photograph). The central perforation is slightly off center and one side of the outer circumference is straight (pl. 45, *c*). Engraved about the specimen in a broad shallow well-polished type of incising are two figures which suggest highly stylized alligators.

A number of the other large undecorated disks of this type are fairly obviously large earspool flares whose stems have been cut off. Four of these pieces have two diametrically opposed biconical perforations through them in addition to the large central perforation. Size ranges from 7.7 to 9.0 cm. in diameter, the central perforations being from 2.4 to 4.9 cm. across. In cross section the disks are nearly flat, except for the original taper of the edge of the flare (pl. 46, *k*, *l;* 47, *a*, *b*). Five others of approximately the same size lack such side perforations altogether. Two of these are very obviously a pair and appear to have been cut from the same light grayish-green translucent pebble (pl. 47, *c*, *f*). Both are slightly elliptical in outline and about 0.9 cm. in average thickness. Maximum diameters are 8.0 cm. in both cases. Both have one highly polished face and rough unpolished backs. Three other pieces of the same general type appear to have been cut down from Type B earspools of the variety in which the flare is rectangular in plan with rounded corners (pl. 47, *d*, *e*). There are also three small disks ranging from 2.7 cm. diameter to 4.1 cm. with relatively large central perforations (0.9 to 1.8 cm. diameter), which correspond very closely in form to the small flares, and which are probably small flares from which the necks have been cut (pl. 48, *a–c*).

In addition to the disks with large central perforations, there are several small disks with small drilled holes at their centers. Three of these are fairly round in outline with diameters ranging from 3.1 cm. to 3.6 cm., thicknesses from 0.4 to 0.5 cm. Two are of jade and are moderately well polished although they show on one face two sawed planes (pl. 48, *e, f*). The third appears to be of quartzite (?) and in addition to the small biconical perforation at the center has a single conical perforation 1.0 cm. out from the center (pl. 48, *o*). A fourth object of similar type is a piece of jade with two parallel straight sides and the rest of the outline round with a very small center perforation (pl. 48, *d*). The distance between the straight sides is 4.1 cm. and the maximum diameter across the rounded sides is 4.5 cm.

Three other small flat objects of jade roughly elliptical in form have conical perforations at their centers and conical radial perforations drilled from the opposite side from that in which the center perforation is made. These objects range from 1.9 to 2.4 cm. in maximum length and from 0.3 to 0.4 cm. in thickness.

There are four small imperforate disks and two similar objects whose form more nearly approaches that of a rectangle with rounded corners (pl. 46, *m–p*; 49, *f, g*). The largest of the disks, though not quite regular in shape has an average diameter of 7 cm. and is 0.6 cm. thick. Both faces and the edge are moderately well polished. Two other disks are very obviously two halves cut from the same piece of opaque grayish-green jade. The polished faces are flat from edge to edge; the unpolished backs taper off in convex curves. The diameter of the two halves range from 5.5 cm. to 5.6 cm. One of the pieces is 0.7 cm. thick, and the other has a maximum thickness of 0.9 cm. The smallest disk is quite round in outline. This may have been the throat disk which originally was found in one of the pair of earspool flares found with throat disks in place. One of the imperforate rectangular objects is 4.3 cm. long by 3.9 cm. wide with well-rounded corners. One side is highly polished; the other side has two sawed planes with an irregular break at their juncture. The maximum thickness is 0.6 cm. The smaller of the two rectangular objects is 2.3 cm. long by 2 cm. wide, again with well-rounded corners. One side is very highly polished and the other is rough. Maximum thickness is 0.3 cm.

Earspool manufacture.—While the collection reveals little new data on jade-working techniques, there are a number of the flares for earspools that were carelessly or poorly made, or apparently were not quite finished at the time the offering was assembled, which between them show clearly the steps in the process of manufacture. This statement must be qualified slightly, for there are two possible sequences in which these steps could have been applied, but it is probably noteworthy that either possible procedure differed from those used by various Maya, as reported by Kidder, Jennings, and Shook (1946, p. 124) and in the Nebaj report (Smith and Kidder, 1951, p. 39, fig. 6), and seem to duplicate the Teotihuacán method. Figure 6 shows in schematic fashion what are believed to be the steps in the manufacture of a pair of jade flares. In *a*, the nodule of jade (perhaps already trimmed to a fairly even circumference) was drilled less than halfway through from both sides with a heavy-gage hollow drill. The cores thus left formed the necks of the two flares. The next step was probably that of sawing the nodule in half, as in *b*, although step *c*, involving sawing out the material between the back of the flare and the neck could have been taken at this time. Most important is that, in every flare in the offering on which indications of work methods could be seen, the horizontal sawing was done in four cuts. A little rectangular platform left from the junction of the cuts at the base of

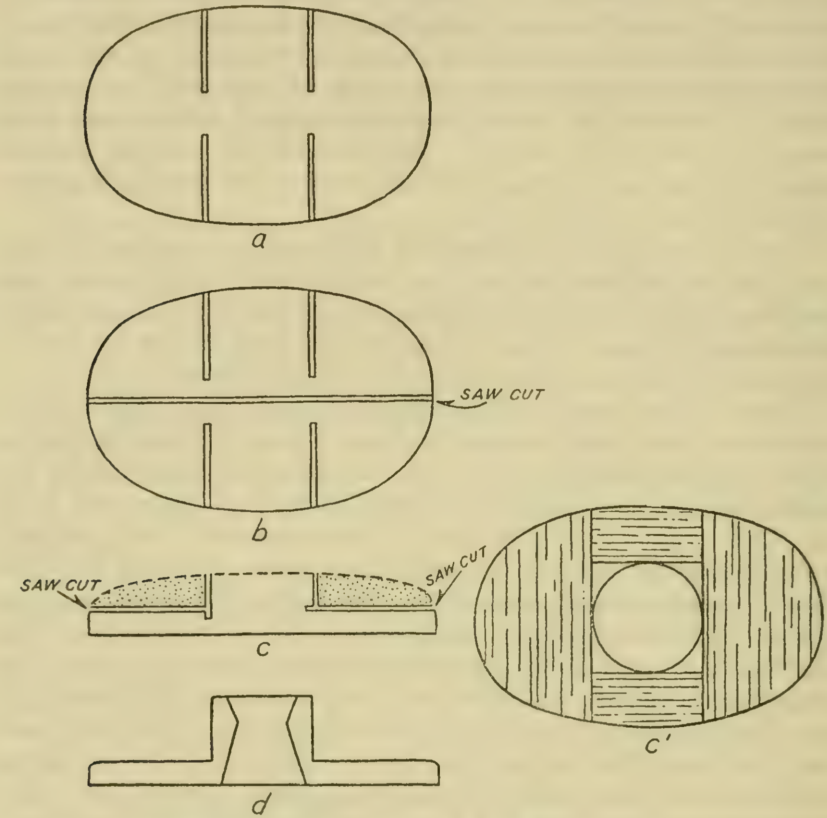

FIGURE 6.—Steps in manufacture of earspool flare.

the stem can be seen in various specimens (pls. 41, *a''*, 42, *c''*, 43, *c'*, *b'*). It may also be noted that the lapidaries who made the Cerro de las Mesas flares were not the most accurate of artisans. In a number of cases one or another saw cut went too far, leaving a deep cut on the base of the stem; in others, the hollow drill cut went too deep, or the nodule was not lined up properly either during the drilling or sawing the piece in two, for one side of the drill cut is deeper than the other. The next step was the drilling out of the throat, by means of two conical drill holes, the larger and deeper in every case in which indications remain being that from the face. The final step or steps consisted in reaming out the throat, thinning and polishing the lips of the flare, etc. It is of course possible that the sequence of steps, as indicated earlier, may have differed slightly, beginning with step *b*, sawing the nodule in two, then performing step *d*, drilling out the throat, and following up with steps *a* and *c*, in that order. In any case, the difference from the Maya methods is probably significant.

Discussion of earspool flares.—The discussion of earspool flares and other parts, or presumed parts of earplug assemblages from Cerro de las Mesas, brings out a number of points of difference in form, method of assembly, and even of manufacture of the pieces from those, for example, of highland Guatemala and other parts of the Maya area. The variants of the Type B flares show more kinship with Mexican highland forms, particularly, I believe, to those from Teotihuacán. We have no positive information on the assembly of the earplugs, but there are the significant negative data: the absence of the sort of backings found at Kaminaljuyú and Nebaj. The absence of shell and shell-and-mosaic backings at Cerro de las Mesas cannot be attributed to poor preservation, for, owing to peculiar soil conditions, shell and other calcareous materials suffered very little damage in the ground. If the disks with large central perforation actually had anything to do with the earplugs, something we can no more than guess at, they may have been backings, but were of a type quite different from the Guatemalan ones. Because of the way in which the offerings were dumped into the pit, it is not possible to tell whether any of the long perforated cylinders of jade were parts of earplug assemblies or not. It may be noted however that there are relatively few such pieces (which for descriptive purposes have been included with the "tubular beads"), so presumably if the tubular elements were used with earplugs at all, such use was rather infrequent. The manufacturing processes appear to relate more closely to those of Teotihuacán, at least if the few specimens recovered by Linne are really typical of that Highland complex (Linné, 1934). Linné's figure 279 shows a fragment of earspool flare apparently broken during manufacture; the throat was obviously being drilled out by means of two conical perforations (the specimen itself seems to have been intended as a Type B variant with round outline). His figure 281, although neither the linecut nor the text make clear whether the throat was drilled biconically or not, shows use of hollow drill in cutting out the neck, and the same four horizontal saw cuts as noted in the Cerro de las Mesas specimens to remove the material between back and neck. The finished specimen, incidentally, was an example of the Type B variant with rectanguloid outline.

CEREMONIAL PERFORATORS (?)

A number of elongated pointed objects, or fragments of such objects, were found which resemble the "ceremonial perforators" (perhaps for ear, nose, and lip-piercing?) from La Venta. These specimens are shown in plates 49, *a–c*, *e*; 50, *a–d*. Four complete objects of this type were found in the cache. Two have expanded bases or handles, one having a slightly irregular bulbous end marred by a deep transverse saw cut. The handle tapers rapidly into a slender point, cylindrical in cross section. The other specimen has a flattened wedge-shaped handle that merges abruptly into an irregular, roughly cylindrical point. The former piece is 14.6 cm. long, the latter, 13.6 cm. The remaining complete pieces are even more similar in form. Both are evenly cylindrical for most of their length. At the "handle" end, they taper sharply to a blunt squared-off end. The points are worked down with more gradual tapers. Two rather short specimens suggest in their form reworked broken tips of similar objects (pl. 49, *c*, *e*). Both are elliptical in cross section, not cylindrical. One has two deep conical drill pits near the reworked end, as though it had been intended to be perforated for suspension (pl. 49, *e*). A third reworked specimen looks as though the shaft had been ringed with a rather wide saw, then cut off square with a narrower one, leaving the end with a short steep bevel (pl. 49, *a*). The remaining pointed object has a quite cylindrical cross section and an irregular break at the handle end (pl. 49, *b*).

CELTS

There were very few celts among the Cerro de las Mesas jades. One of these, short and stubby, with a slanted bit, suggests considerable use and regrinding (pl. 49, *k*). A second example is long, flattish, and quite thin, being elliptical in cross section. It is 20.7 cm. long by 6.2 cm. in maximum width, and has a maximum thickness of 1.4 cm. Another example, this time a smaller one, presumably of a slightly different function, has a biconical perforation just back of the bit. Like the preceding, this piece is rather flatter than the usual Mesoamerican celt and in addition tapers abruptly to a small pointed poll.

It is 7.5 cm. long, 2.2 cm. wide, and has a maximum thickness of 0.8 cm.

One of the more unique pieces in the collection is the decorated celt shown in plate 36, *f*. The poll has been worked into a birdlike head with a heavy down-turned beak reminiscent of that of the Olmec Bird-monster. The outline has been accentuated by sawed lines above and below the back and alongside the upper end. The area just below the decorated head or between poll and bit has a very marked cavity which perhaps served to make the lashing more rigid. Two cylindrical perforations run transversely across the long axis of the celt in the same plane as the bit, one just above, the other just below the concave surface (fig. 7). Presumably these two also serve for lashing purposes, although it is possible the celt was made to be worn on a two-strand necklace, and not hafted. In general style

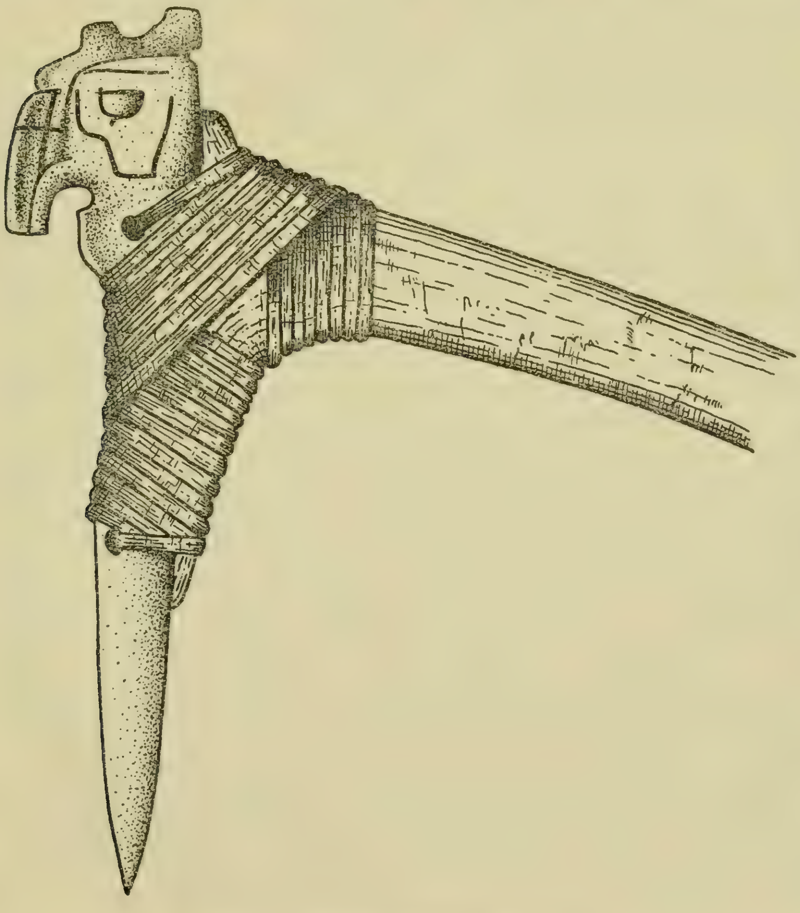

FIGURE 7.—Suggested hafting of decorated celt.

this piece is unquestionably Olmec, although no exactly similar objects have been found among Olmec remains; this piece probably was a trade object, made to be used for ceremonial purposes. It is made of dark-green jade with a pronounced bluish cast, somewhat mottled, and definitely blue in tone at the bit end.

Four other celts were found which I could not locate in the collections. Among them was a neatly made celt of alabaster, with greenish tones. Valenzuela's inventory gives its dimensions as 9.7 cm. long by 4.0 cm. wide.

BEADS

Beads of various types, totaling 303, were examined. In the cache, the beads did not occur in any definite patterns or rows, but apparently were thrown in unstrung, so we have no information on the way in which they were used. There does not appear to be anything very distinctive about the forms represented; most of them are fairly common throughout Mesoamerica.

Irregularly shaped beads.—There are a good many beads which are little more than pebbles, ground smooth, polished, and drilled. They vary all the way from quite irregular shapes to a form approximating that of the ubiquitous subspherical bead. I am not completely satisfied with the way in which I typed these specimens; a check of the photographs suggests that some poorly made subspherical specimens—examples with a flat side, or small irregularity left from the original surface—were included which probably should have been counted with the subspherical beads. As a matter of fact it is very difficult to draw a hard and fast line between the two classes, since they more or less shade into each other, although extreme specimens of either type are quite obviously distinct. However, the photographs are not adequate material on which to base a revision of the original classification, so it will have to stand. Plates 51 and 52 show the range of the irregular or "pebble" forms. A total of 126 pieces was included in this category, although a more liberal treatment of the subspherical type would probably reduce this number by at least some twenty-odd. In size the pieces range from one with a maximum diameter of 3.1 cm. to a specimen whose greatest diameter is 0.9 cm. There is considerable variety in the type of stone used, only a relatively few being of what we regard as jade of high quality. A number are of other types of stone, chiefly calcite, with quartz and chlorite inclusions, and serpentine. Two rather flattish pieces are of a pale blue and white material that suggests turquoise (or amazonite?) in appearance. There is one group of about 30 pieces that may have formed a single string, since they are all small in size, are of mottled green and white jade, and are quite highly polished. The drilling pattern of this entire type, if it can be regarded as such, is very consistent, for 110 of the 126 pieces are drilled biconically, so that the perforations intersect close to the middle of the stone; in eight cases only is the intersection of the two drill pits markedly to one side or the other, and in eight instances only was the bead drilled with a single conical hole.

Subspherical beads.—There were 57 beads of fairly regular to quite regular form. In size they ranged from one whose greatest diameter (at right angles to the axis of the perforation) was 4.1 cm. to three beads whose maximum diameter was 1.1 cm. As in the preceding group, these specimens varied considerably both in color and polish. Only three had conical perforations; the rest were all drilled from both sides (biconically), and in all these cases the two drill pits met at about the center of the piece.

Gadrooned beads.—Beads with sawed cuts or arcs down the sides, parallel to the perforation, are really a subvariety of the subspherical type (pl. 52, 2 left-hand specimens in third, fourth, and fifth rows). There are seven of this form in the cache materials. The depth of the sawed lines varies greatly. In two instances, the lines are very light. Possibly they were not finished when deposited. The rest have pronounced grooves: one small bead, in fact, being cut away to the point of being cross-shaped in plan (pl. 52, third from left in fifth row). There is one of these beads in which the grooves are slightly spiraled clockwise. There are four beads with four grooves, one with five, one with seven, and one with three (these are spaced as though four were planned, however). All but one have biconical perforations. Sizes range from 2.3 cm. in maximum diameter (transverse to the perforation) to 1.5 cm. in the same dimension.

Tubular and "barrel-shaped" beads.—While these two forms may be differentiated at some sites, they grade into each other in the Cerro de las Mesas series (pls. 53, 54). Several of the long, well-made pieces that would ordinarily be classed as "tubular" show a very slight taper toward either end; a few of the "barrel-shaped" specimens have but slight taper, and, partly because of the rather wide openings of the perforations, appear to have square-cut ends. There are 33 definitely tubular specimens, 9 intermediate ones, and 52 that conform to the definition of the barrel-shaped type. Incidentally, most of the last-named are in a group quite evenly graded in size and all of which are of calcite (?), suggesting that they may have been a single lot. A fragmentary specimen, larger than the rest, is of alabaster. In addition, there are 14 short stubby pieces with square-cut ends which seem more like modifications of one or the other of the foregoing types than of the subspherical form.

There are several decorated pieces in the tubular series. One of these (pl. 53, top row, left, and fig. 8) has a highly conventionalized face indicated by sawed lines and drill pits. The bead is 5.5 cm. long, and 1.2 cm. in diameter. Three specimens are decorated with lines that run in spirals down the long axis. (These are described from photographs, not the actual specimens.) The first, a massive piece 8.9 cm. long and 2.3 cm. in diameter, has four (?) wide grooves alternating with an equal number of narrow ones, spiraling in a clockwise direction. The lands bisected by the narrow grooves are about twice the width of the wide grooves. The rate of twist is about one complete turn in seven diameters. The second bead decorated with a spiral is encircled by two (?) lines that proceed in a counterclockwise direction, and appear to twist at the rate of about one turn in two and a half diameters. This specimen measures about 6.8 cm. in length, and about 1.6 cm. in diameter. The third, 4.5 cm. long, and 1.0 cm. in diameter, with slightly slanting rather than squared off ends, has a closely spaced pair of lines, circling in a clockwise direction, that made a complete turn in less than two diameters. Five specimens have encircling grooves about one or both ends (pl. 53, middle row). The most elaborate of these, a bead of brownish color (calcite apparently), 5.6 cm. long and 1.1 cm. in diameter, has two wide shallow, somewhat irregularly cut grooves at each end. Two other pieces, also of calcite, have, respectively, one and two narrow grooves cut about one end. A fourth bead, a short stubby one, has a wide shallow groove at the middle, and the fifth is constricted at the end, probably having been cut off from a longer bead.

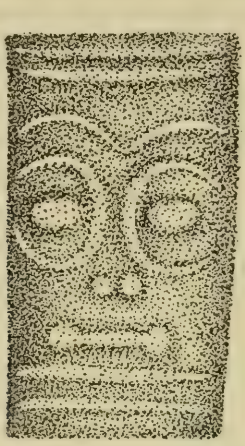

FIGURE 8.—Decorated tubular bead.

An approximation of the type of tubular bead with flared end occurs in the collection (pl. 53, bottom row, left). It is 6.6 cm. long.

It differs from the Kaminaljuyú examples of this type (Kidder, Jennings, and Shook, 1946, p. 113), in that there is no pronounced taper from the flared to the opposite end. The greatest diameter at the flare is only 0.6 to 0.7 mm. greater than that of the maximum diameter near the other end. Hence, this might conceivably be an imitation of the flared-end type, but patently was not made of a core cut out with a hollow tubular drill as the Kaminaljuyú pieces are believed to have been made.

Two specialized beads, both of which are of the transitional group, have multiple perforations. One of these, of light grayish-green jade with pronounced crystalline structure, has a hole drilled at either end (1.5 mm. from one end and 3 mm. from the other), both of which intersect the longitudinal perforation along the main axis of the bead, at an angle slightly greater than a right angle. The specimen is 2.9 cm. long, and 1.5 cm. through the maximum diameter. The other bead has a single large perforation drilled vertically to intersect the longitudinal perforation, just to one side of the longitudinal midpoint. This piece is 2.5 cm. long, and 1.1 cm. through its greatest diameter.

One of the short tubular beads (this particular piece has rounder sides than most, but is proportionately longer and much flatter on the ends than the subspherical forms) has two pairs of small shallow drill pits spaced close together about its circumference, and a light saw cut below the pits, as though it had been undergoing the initial steps of carving when put in the cache.

Miscellaneous forms.—Two beads have a definitely angular outline, although with rounded corners (pl. 52, *a*, fourth row, right).

MISCELLANEOUS OBJECTS

Among the miscellaneous objects is a flat thin blade with serrated edges formed by sawing slanting lines from one side only (pl. 48, *k*). The form suggests a blade or projectile point, but the piece is probably a stylized, not very realistic copy of a sting-ray spine. The material is dark-green jade, moderately well polished on both sides, 7.6 cm. long by 1.9 cm. wide, and carrying a fairly even thickness of 0.3 cm.

Two peculiarly fashioned rectangular objects are without a doubt a pair, whatever they may have been. Just how they were meant to be used is not known. They are almost exactly of a size and are of the same opaque pale-green jade mottled with small areas of medium-green color (pl. 39, *a*, *b*). The stone is so much alike that they must have been sawed out of the same piece. Both are long narrow rectangles in form. The long sides are very nearly parallel but the ends are not quite square. The face of each piece shows traces of two planes formed by two longitudinal saw cuts that did not quite center. Each piece has a perforation about 2 cm. long drilled in from either end. These are slightly tapering holes that average a little over 0.7 cm. diameter at point of entry. At either end of both pieces other holes were drilled in from the face to intersect those just described. Between these perforations in the face a longitudinal saw cut was made in each piece, being cut through quite deeply; in fact, in the case of one specimen it very nearly goes through. The cuts curve, being deepest at their centers, and indicate a rigid saw, not a cord saw, was used (fig. 9). A cord could be strung through each piece longitudinally without showing on the surface. The objects give the impression of having been tools rather than ornaments despite their moderate over-all polish. It should be mentioned that one of them is considerably battered here and there along the edges and on one end. The other has no corresponding nicks. Both of the pieces have a maximum length of 19.5 cm. and a width of 4.4 cm. One has a maximum thickness of 1.4 cm. and the other of 1.3 cm.

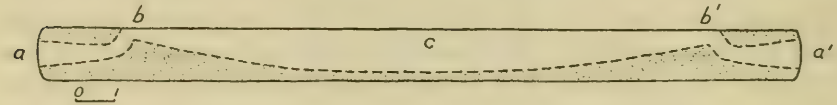

FIGURE 9.—Cross section of rectangular slotted objects of jade. *a*, *a′*, Large-bore drilled holes at ends of object; *b*, *b′*, drilled holes entering flat face at slight angle, and intersecting with *a* and *a′*; *c*, longitudinal sawed slot, partially intersecting *b* and *b′*.

Another object of unknown use is thin and flat, and has the form of a slightly irregular ovoid. It is of opaque dark-green jade mottled with very dark-green areas and small light-green spots. It is quite even in thickness and the edges are evenly rounded. At the narrower end it has a biconical perforation. Down the center is a long string-sawed slot 9.4 cm. long and 0.4 cm. wide with a short transverse slot joining the longitudinal one at the middle. The short slot is 1.2 cm. long. The object is moderately well polished all over. It has a maximum length of 15.7 cm., is 7.3 cm. across the wide end and 5.7 cm. across the narrow end, and is 0.7 cm. thick.

A small object of calcite (?) with inclusions of quartz and chlorite is of an elongated semilunar form (pl. 49, *l*). At the ends, a little nearer the straight than the curved edge, are two large conical perforations. One face of the object is quite flat; the other is assymmetrically convex, being thickest near the curved edge. At the center of the curved edge is the remnant of a conical drilled pit which did not penetrate all the way through the stone. The object is 7.7 cm. long, 2.1 cm. in maximum width across the flat face, and 0.6 cm. in maximum thickness.

A rodlike object of the same material has three sets of three encircling grooves, two wide ones with a narrow one between them, above the ends and middle (pl. 49, *m*). The back of the object is slightly irregular and the grooves do not go clear across. Two pairs of intersecting conical perforations, one at either end, were drilled from top and back edges. This object is 8.0 cm. long, 1.6 cm. wide, and 1.1 cm. thick.

A small flat pendant of opaque blue-green jade is 2.3 cm. long and 1.7 cm. wide (pl. 48, *h*). The general outline is approximately rectangular. It has a conical perforation near one end and a shallow drilled pit halfway down along one edge. Six shallow saw cuts tapering from the edge toward the central area of the stone give a form suggesting a highly conventionalized bird. The sawed face is highly polished and the other face has only a moderate polish. The thickness is 0.3 cm. Another pendant is a small very highly polished piece of green jade whose original form was apparently approximately that of a trapezoid. It has a small biconical perforation close to the narrower edge. It is 2.5 cm. long.

There was an imperforate sphere of pale greenish alabaster found among the offering. I apparently overlooked it in assembling the materials for study at the Museum. Valenzuela's list gives its diameter as 5 cm.

A small rodlike object of light-green jade flecked with medium green was apparently made or broken from some larger object (pl. 49, *d*). Sawed grooves encircle the ends, one a short distance from one end, the other right at the point of fracture. Both ends are rough and unworked, although the rest of the specimen is moderately well polished. The cross section of the piece is elliptical, and one side retains traces of two longitudinal drilled holes which just barely intersected. These were made prior to the cutting out and working down of the present specimen. The length of the object is 6.5 cm., the width at maximum diameter is 0.9 cm., and the minimum diameter is 0.7 cm.

DISCUSSION

The foregoing, and I fear somewhat wearisome, descriptions of the specimens from the offering, bring out a few significant points. One of these is the need for more detailed typologies of Mesoamerican artifacts of jade and similar materials, especially those from controlled excavations, if we are to be able to make useful comparative studies, define regional styles, and recognize trade pieces when we see them. The great bulk of the objects from the offering are either of what appear to be ubiquitous forms, or else types that cannot be related with any certainty to other regions or epochs. Some of these may eventually prove to be Central Veracruz or even Cerro de las Mesas specializations, others may turn out to be imports. The few pieces that we are able to identify will be discussed in the following paragraphs.

Olmec specimens.—Cerro de las Mesas, of course, was *not* an Olmec site, although it is situated close to the northwest boundary of the Olmec region of southern Veracruz and western Tabasco. There are actually rather fewer definitely Olmec style pieces in the offering than we might expect to find among the neighbors of those skilled lapidaries. Two figurines, the canoe-shaped "plaque," the decorated celt, and perhaps the death's head, exhaust the list, unless the so-called "ceremonial perforators" are discovered to be an Olmec trait (they have not yet been reported from other regions, although three similar objects of jade, two of which are bipointed and one of which has one sharp and one blunt tip, come from Teotihuacán (Gamio, 1922, pl. 121). The plaques in the form of clamshells suggest another parallel, although it must be noted that we found evidence of a cult associated with shells and other marine forms at Cerro de las Mesas. It also appears that most of these pieces should be attributed to the La Venta (Middle Tres Zapotes) phase of that culture, since as far as we know now, that rather long period represented the florescence of the pure strain of Olmec art. However, ceramic and figurine cross checks between Cerro de las Mesas and Tres Zapotes indicate that the horizon designated Lower I at the former site was contemporary with at least part of the Middle or La Venta phase, and Lower II, from which the offering comes, was coeval with Upper Tres Zapotes. Hence the pieces must have been kept as heirlooms for a considerable length of time before they were placed in the offering pit beneath the stairway of the mound. The esteem in which the specimens were held, if they really were treasured all that time at Cerro de las Mesas, as well as the scant number of them, reemphasizes a point Stirling and I have been making ever since the Cerro de las Mesas dig: not only was that site not Olmec, but it seems to have had relatively little contact with Olmec culture throughout the contemporary periods.

Highland influence.—Similarities of certain earspool flare types and methods of manufacture to published specimens from Teotihuacán have been mentioned. If the assumption is correct that the highland pieces used for comparison are typical, we have additional corroboration of the ceramic evidence that indicated that highland (Teotihuacán, and later Mixteca) influence was the predominant one during the history of the site. Some archeologists are coming around to the view that perhaps Teotihuacán culture itself was derived from the Gulf Coast, but the fact that in post-Teotihuacán times Cholula lacquer polychrome ware was either imported in some quantity or was duplicated at the coast site, and strongly influenced the local ceramic pattern, might be taken as a hint that there was an old, well-established route of communication and diffusion from highland to the coast. The Danzantelike figurine plaque may well have been imported via the same route from its Oaxacan place of origin, if its style has been correctly identified.

Maya and Mayoid specimens.—Aside from the nearly obliterated engraving, which seems to have a definite Maya flavor, on the small plaque, there are no pieces that can unhesitatingly be singled out as representing Maya art. Yet many of the small flat pendants in figurine form (both heads and full figures), in a nebulous way remind one of small anthropomorphic pendants from the Maya area, particularly those in which the nose is formed by a continuation of the lines marking the tops of the eyes, or the eyebrows. If one compares them with, for example, the small flat heads in the Rossbach collection (Lothrop, 1936, especially figs. 58 and 59), or with some of the Nebaj specimens (Smith and Kidder, 1951, figs. 52 *a*, *c*, *g;* 53 *b*, *c;* 58 *c* (3)), a generic similarity may be noted. Common traits, in addition to the subject matter, include the use of small flat, often odd-shaped pieces of stone; carving in very low relief—actually, drawing is a better term, for there is little or no third dimensional representation; the cuts are wide and shallow, and the lands between them of even height; the hollow drill was frequently resorted to for marking circles and arcs.

If these objects in the Cerro de las Mesas offering are simply trade objects, and none was made locally in imitation of the exotic pieces, they indicate little actual Maya influence, and there probably was very little, except in the most indirect manner. None of these figurine-pendants are unfinished, as though they were in process of manufacture (locally), when the offering was made. In this they differ from the earspool flares believed to be of Teotihuacán type, which were interred unfinished, the throats incompletely reamed out, etc., suggesting that at least part of their manufacture may have been carried out at the site itself, following techniques prevailing in the highland.

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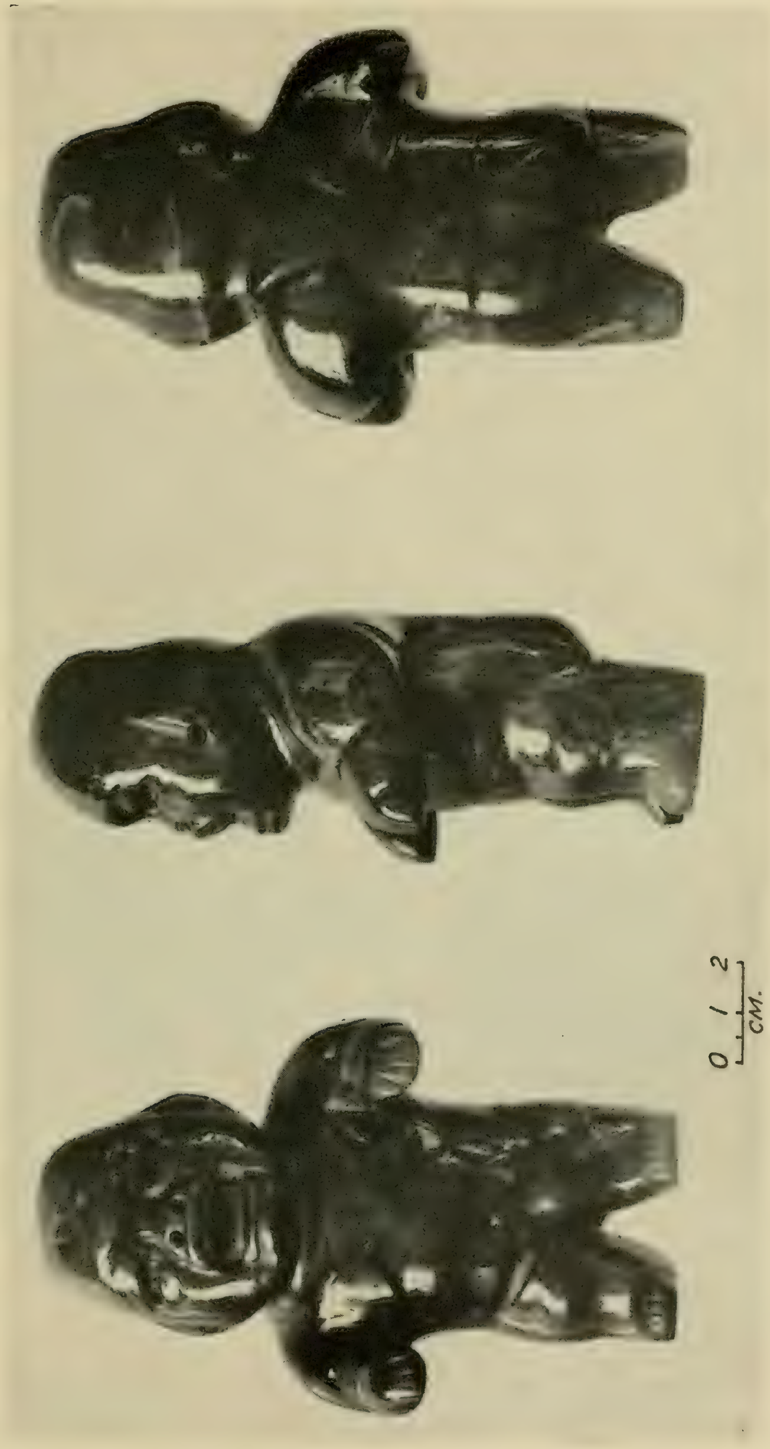
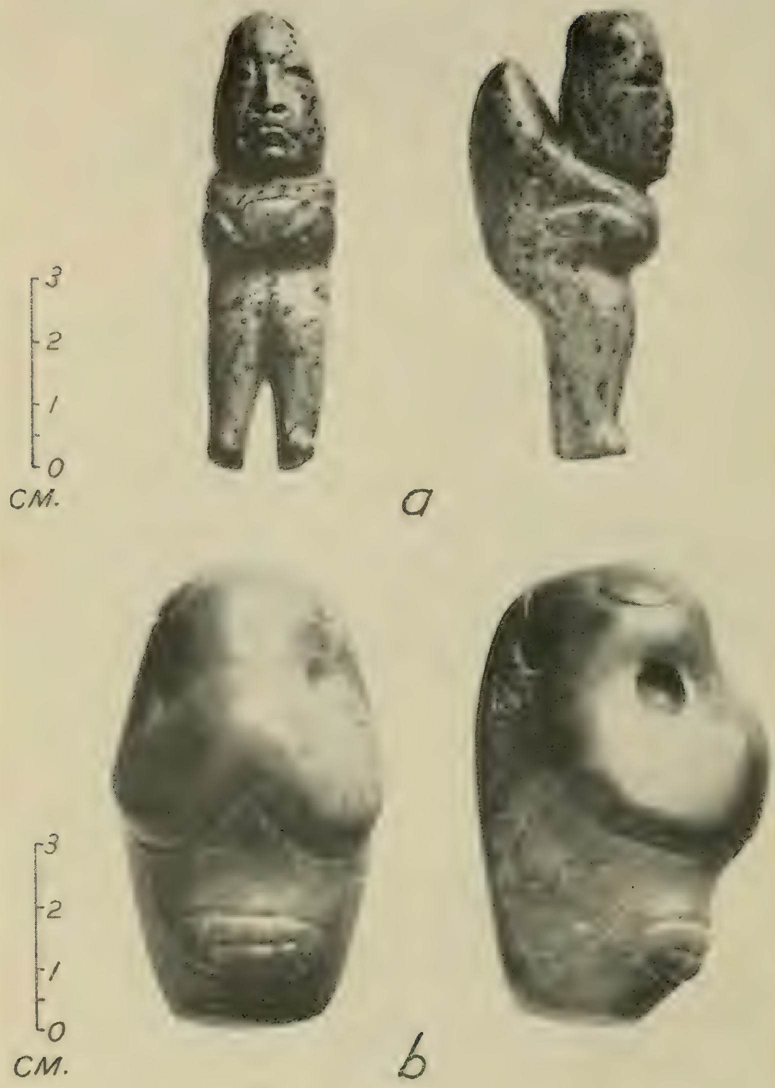
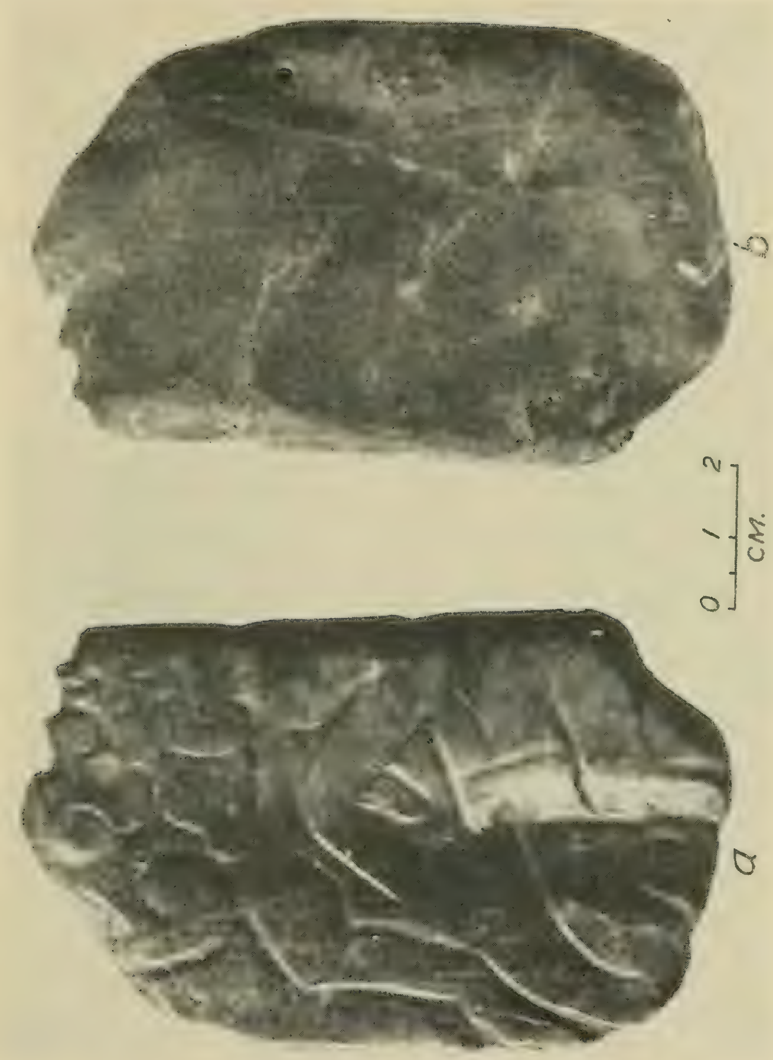


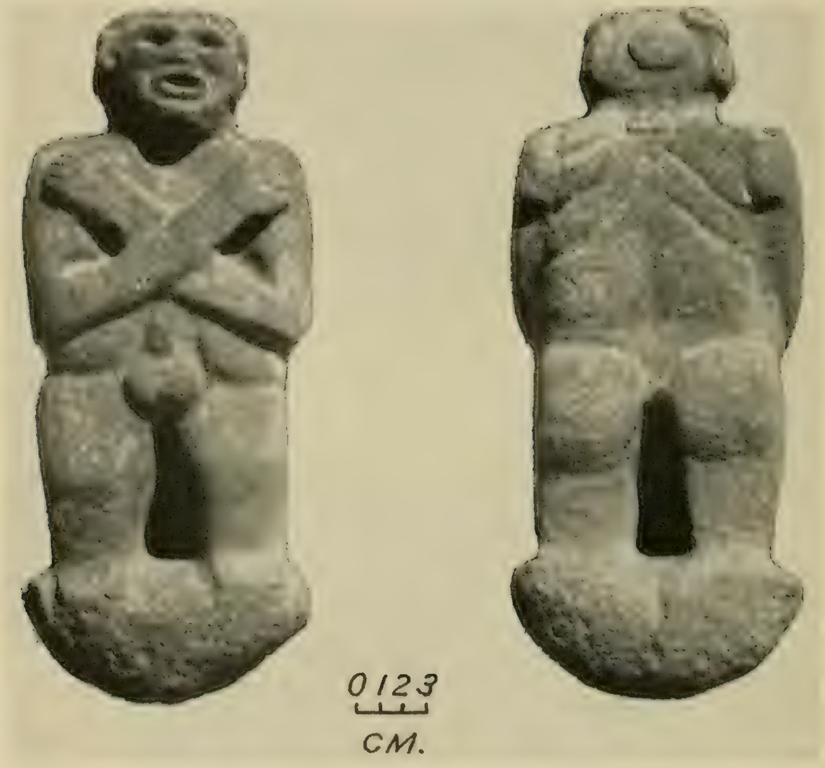
Front, side, and rear views of Olmec figurine.


3
2
1
0
CM.
a
3
2
1
0
CM.
b

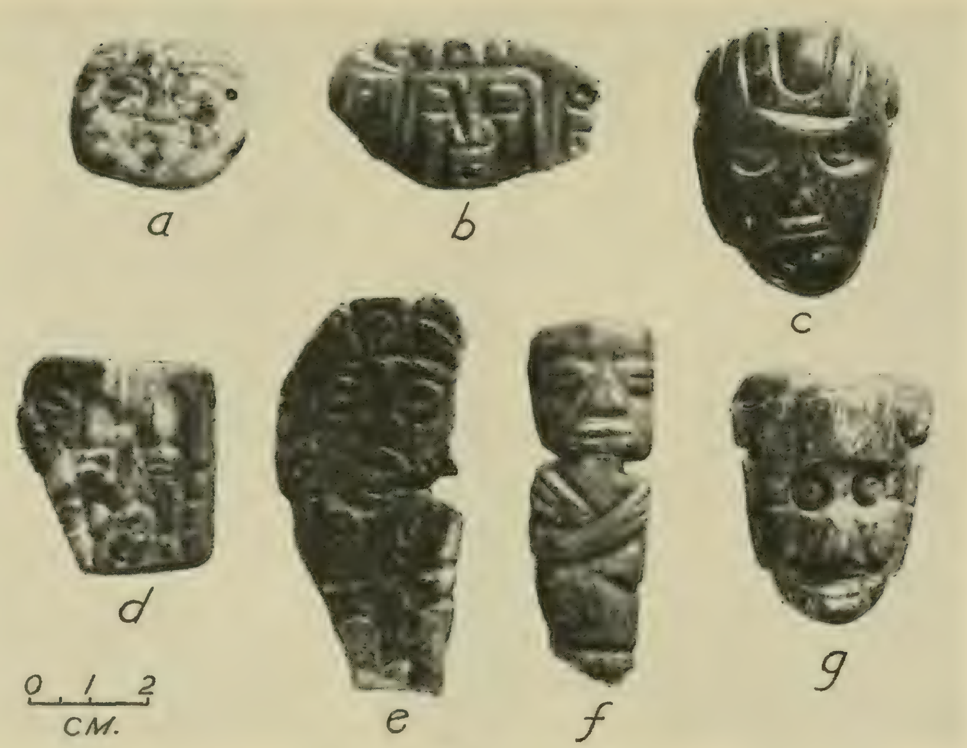
a, Olmec figurine of hunchbacked (?) personage, of serpentine; *b*, Olmec (?) style skull pendant.



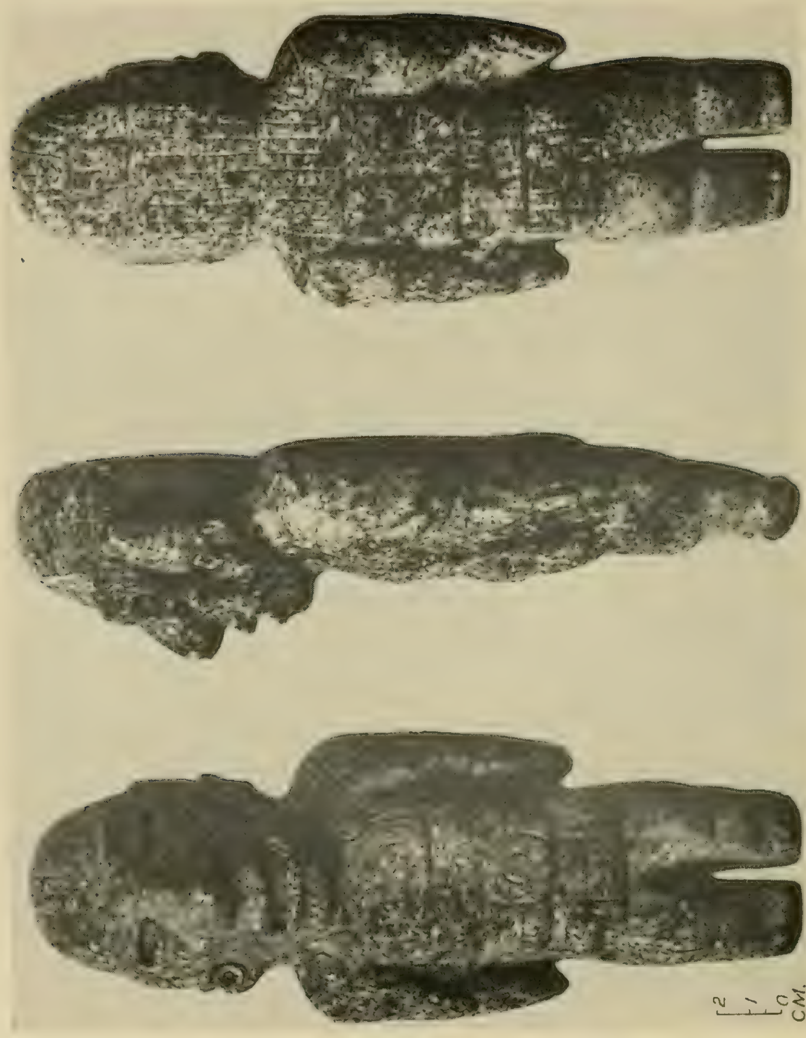
a, front, and *b*, back of Zapotecan (?) style figurine plaque.



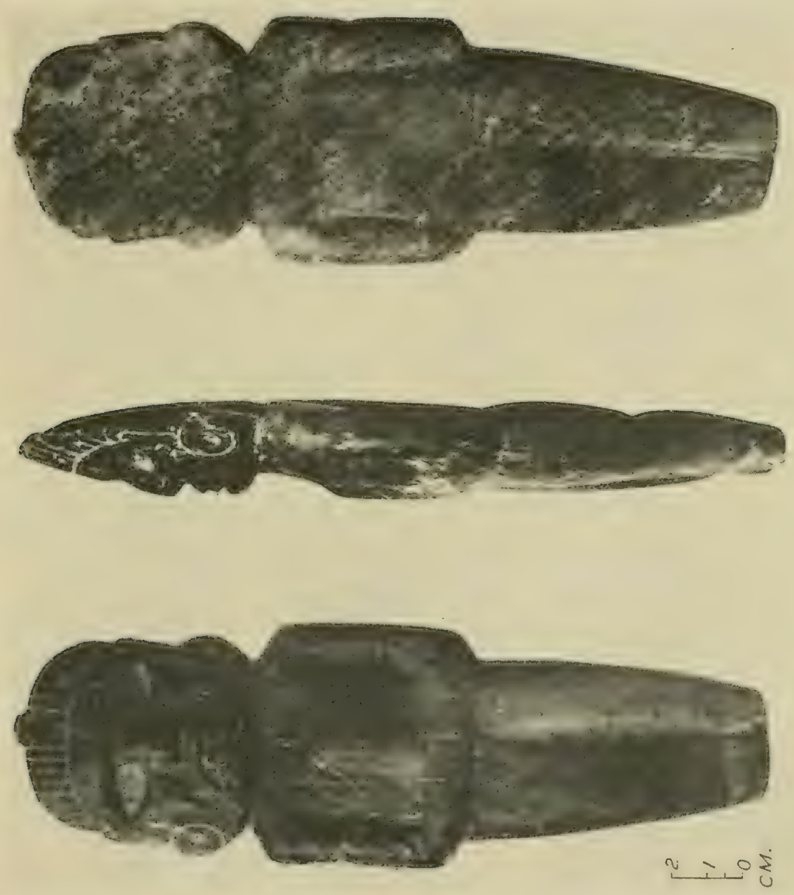
Large figurine of "crossed-arm style," of diorite (?).


a
b
c
d
e
f
g
0 1 2
CM.

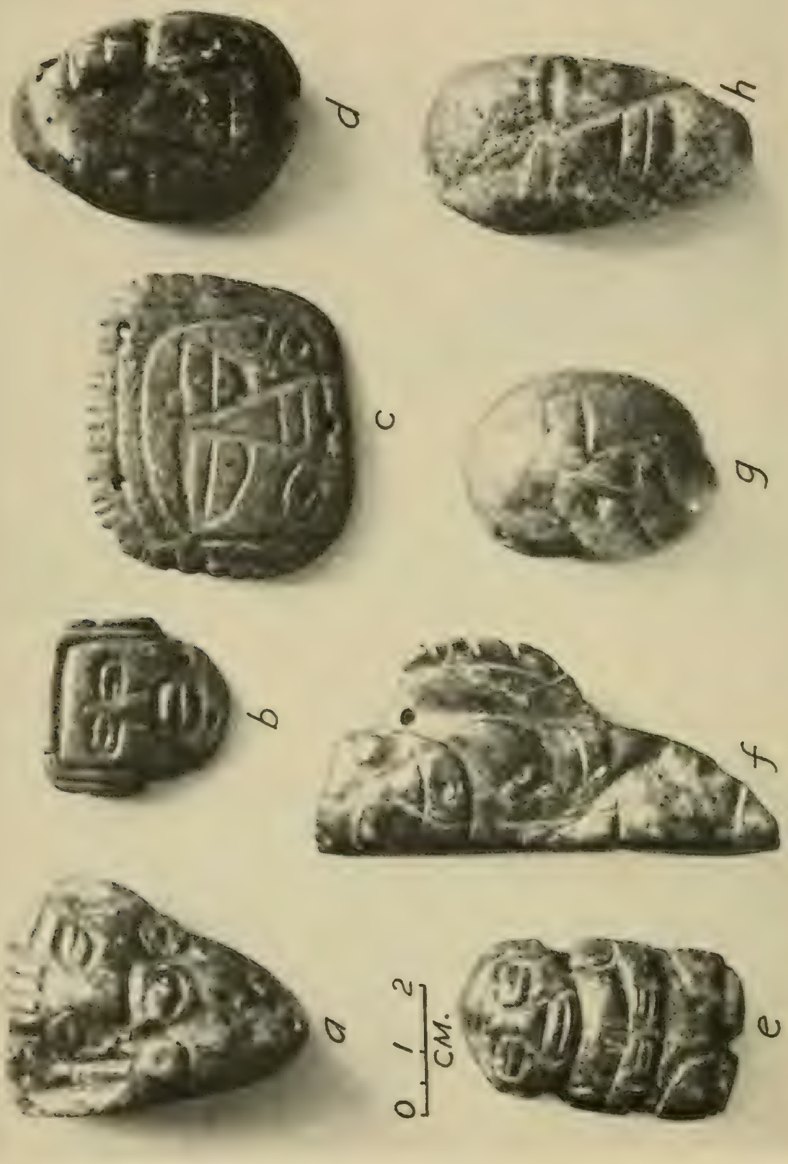
Small jade figurines and figurine heads.



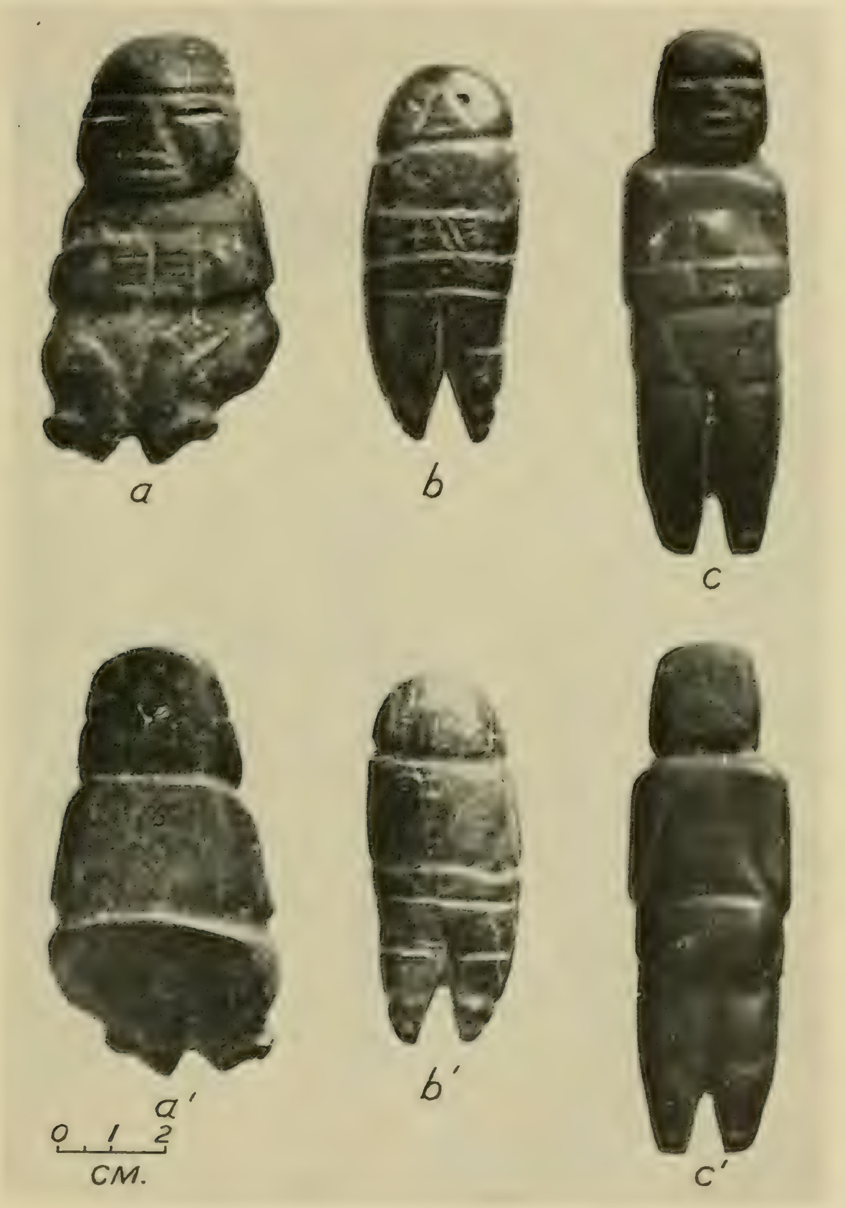
Front, side, and rear views of stone figurine.



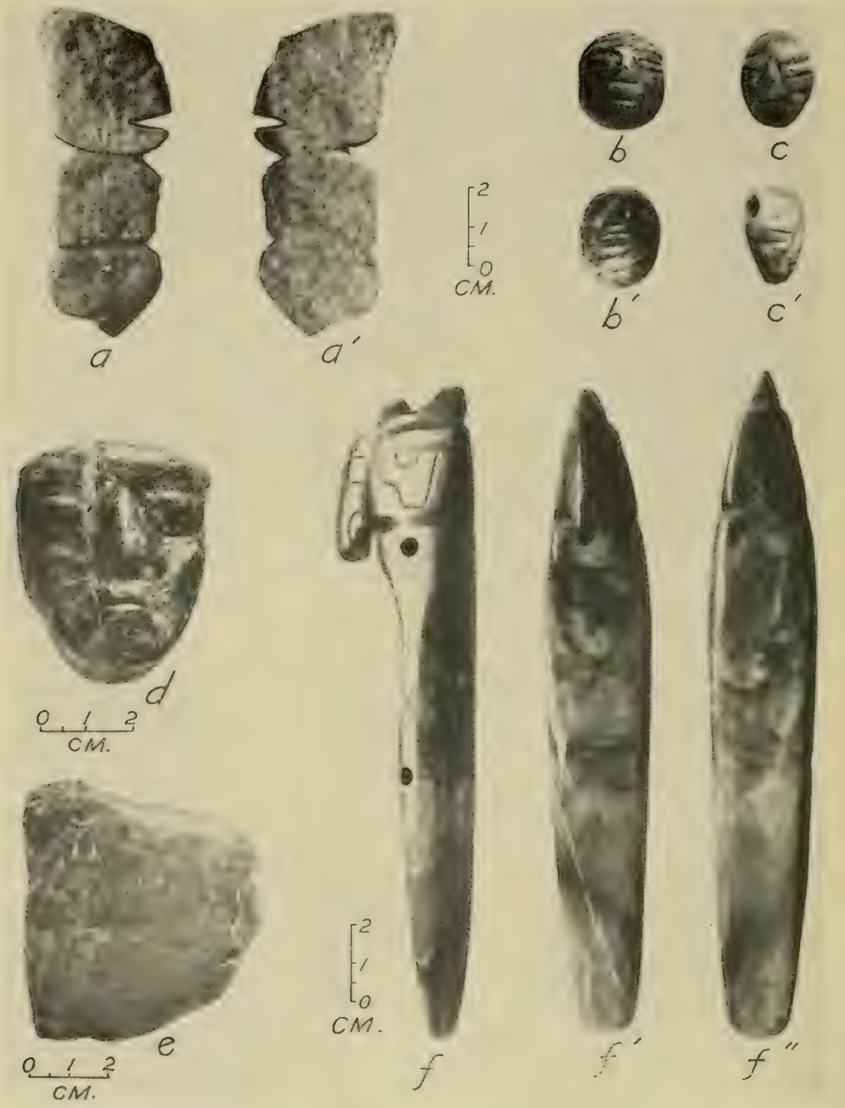
Figurine of dark-green stone: front, side, and rear views.


d
h
c
g
b
f
a
e
0 1 2
CM.

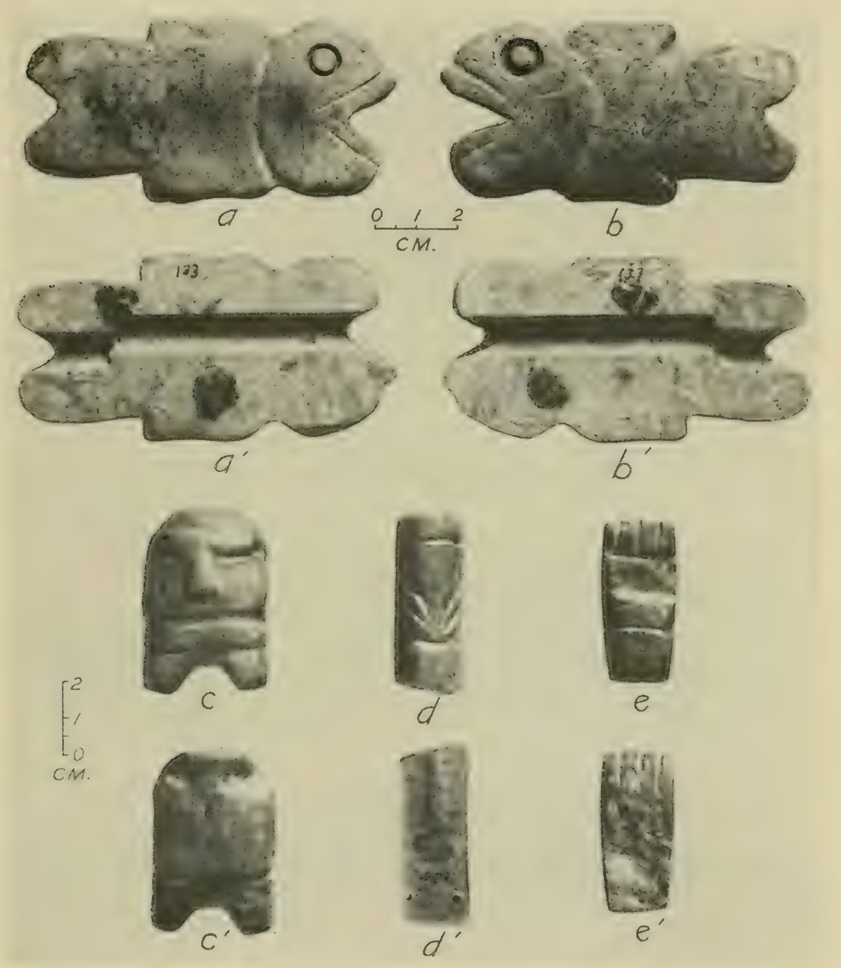
Small jade figurines and figurine heads.


a
b
c
a'
b'
c'
0 1 2
CM.

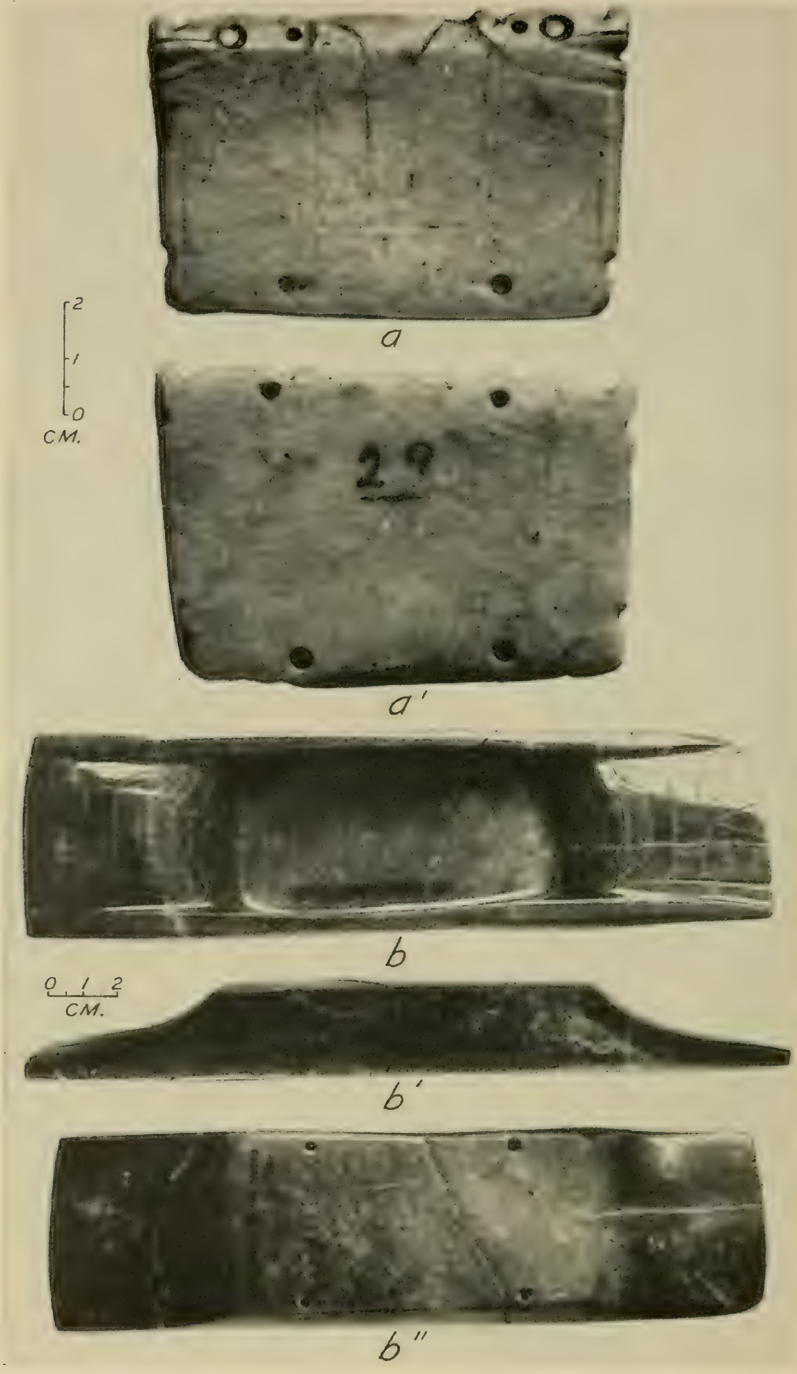
Miscellaneous figurines, front and rear views.


a
a'
2
1
0
CM.
b
c
b'
c'
d
0 1 2
CM.
e
0 1 2
CM.
2
1
0
CM.
f
f'
f''

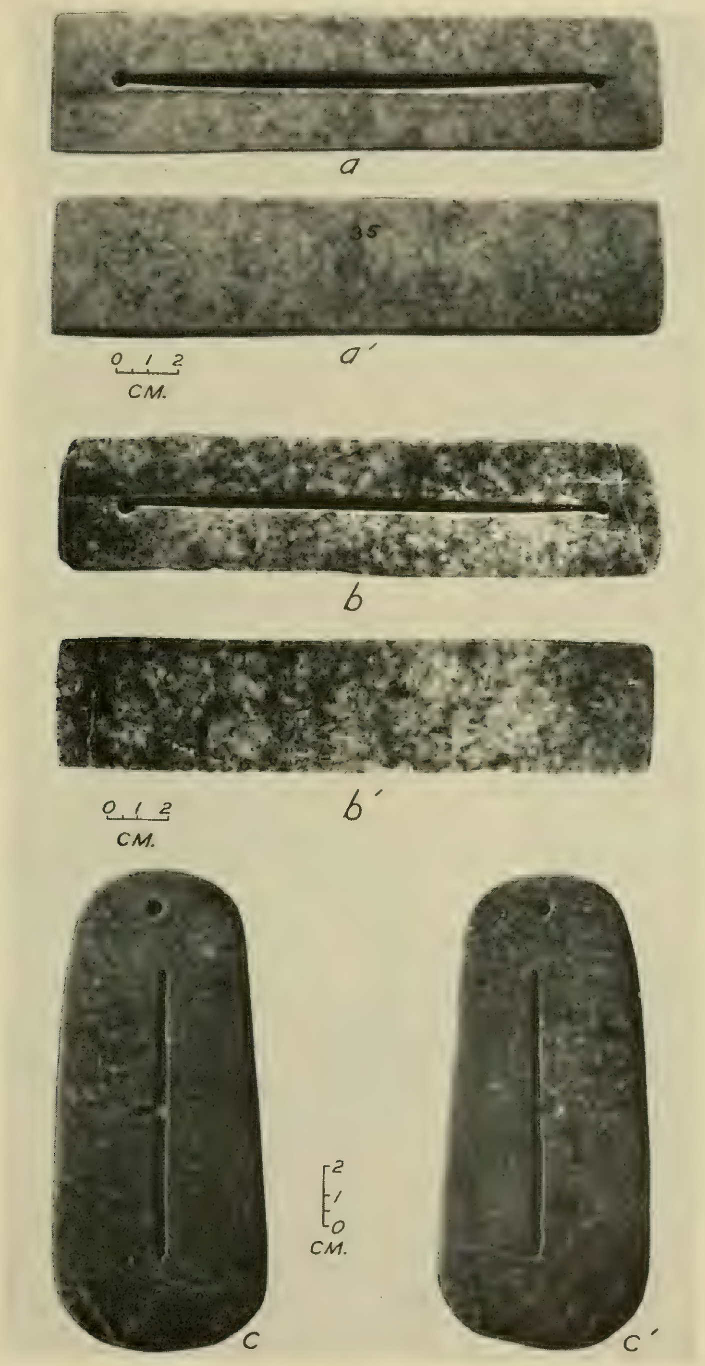
Miscellaneous jade objects. *a*, *a'*, crude figurine; *b*, *b'*, *c*, *c'*, figurine beads; *d*, figurine head; *e*, fragment of clamshell-shaped plaque; *f*, *f'*, *f''*, decorated celt.


a
0 1 2
CM.
b
133
133
a′
b′
c
d
e
2
1
0
CM.
c′
d′
e′

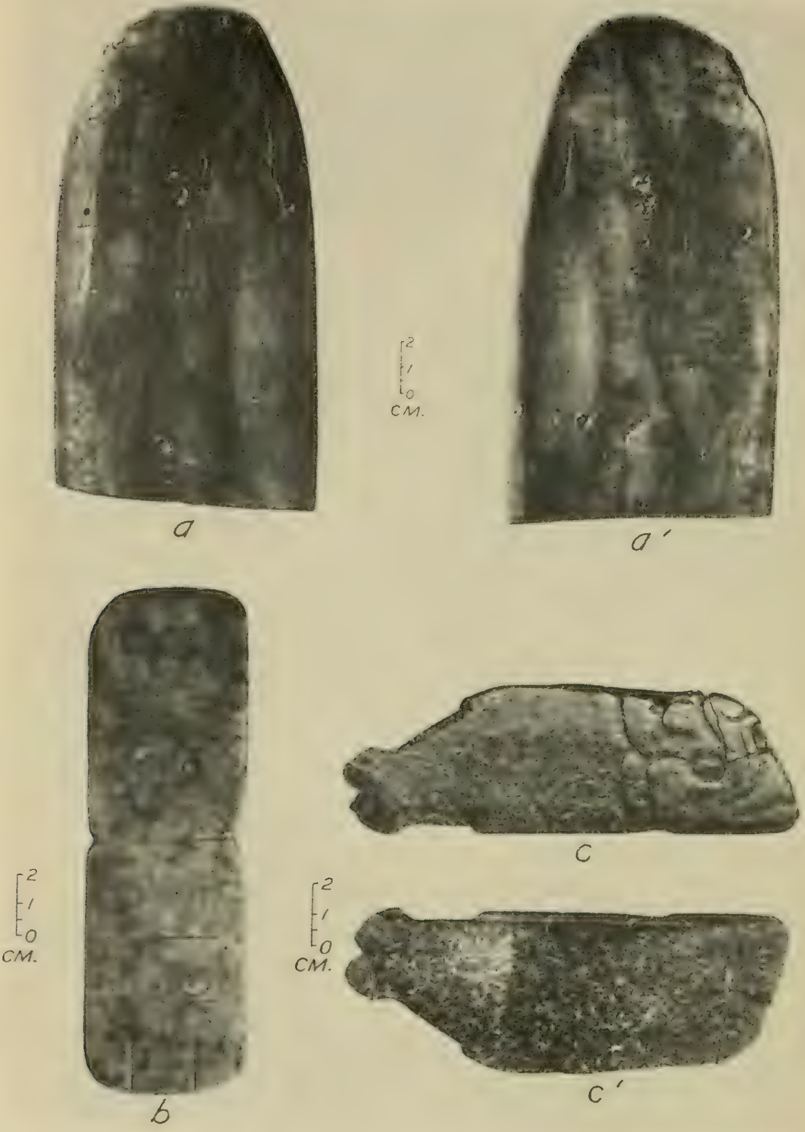
Miscellaneous figurines. *a′* and *b′* are views of *a* and *b* turned upside down to show back (inner) surfaces.


2
1
0
CM.
a
29
a'
b
0 1 2
CM.
b'
b''

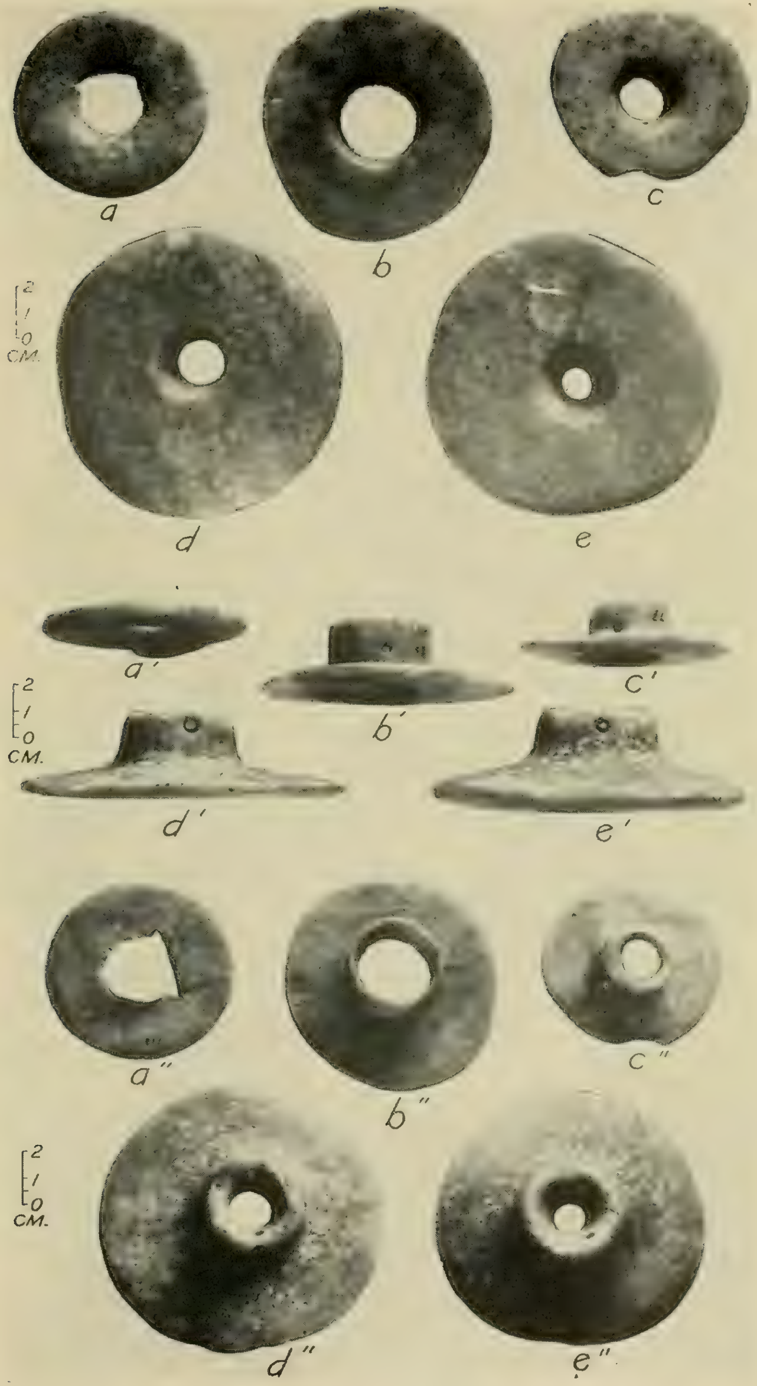
Plaques. For original design of *a*, *a′*, see figure 3. *b*, *b′*, *b″*, Olmec "canoe" plaque.


a
35
a′
0 1 2
CM.
b
b′
0 1 2
CM.
2
1
0
CM.
c
c′

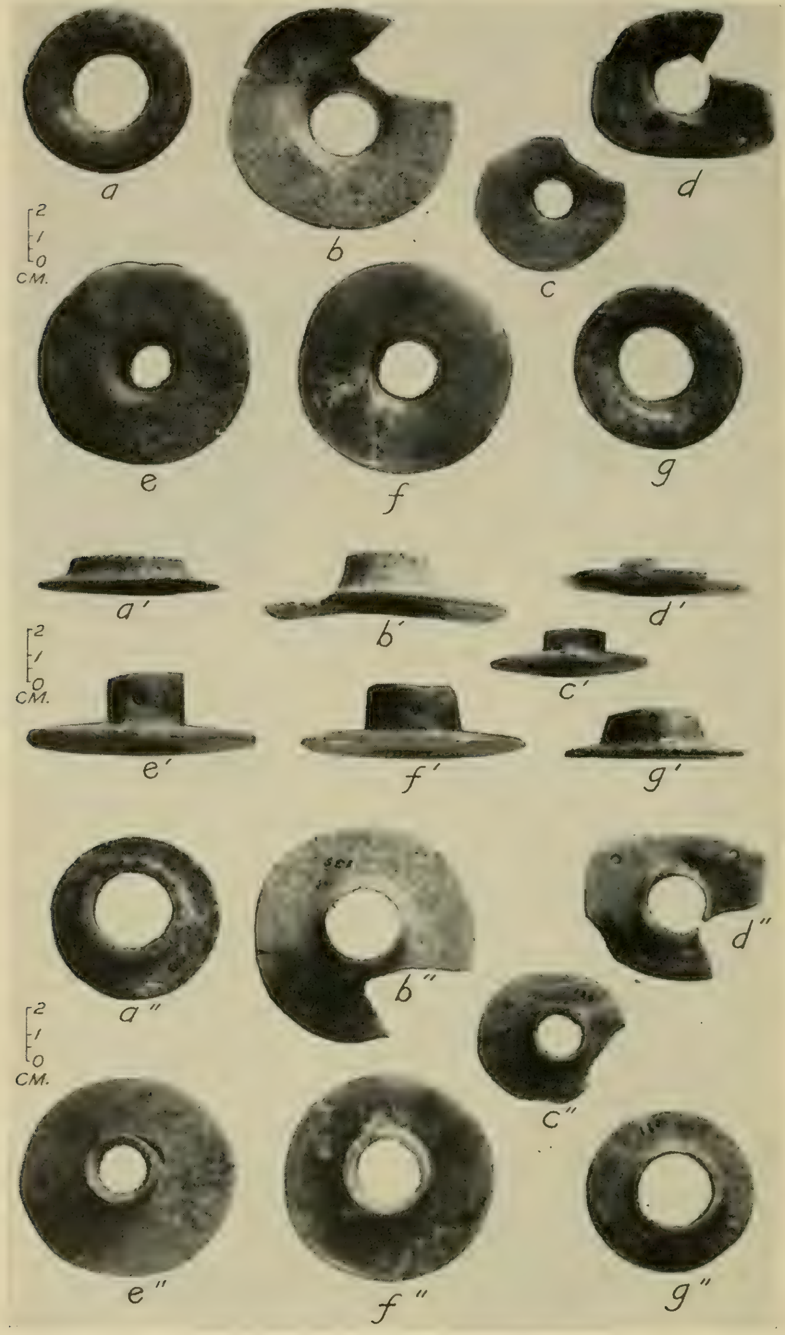
Plaquelike objects of unknown use (both sides of each of the three pieces are shown). *a* and *b* are of nearly identical size.



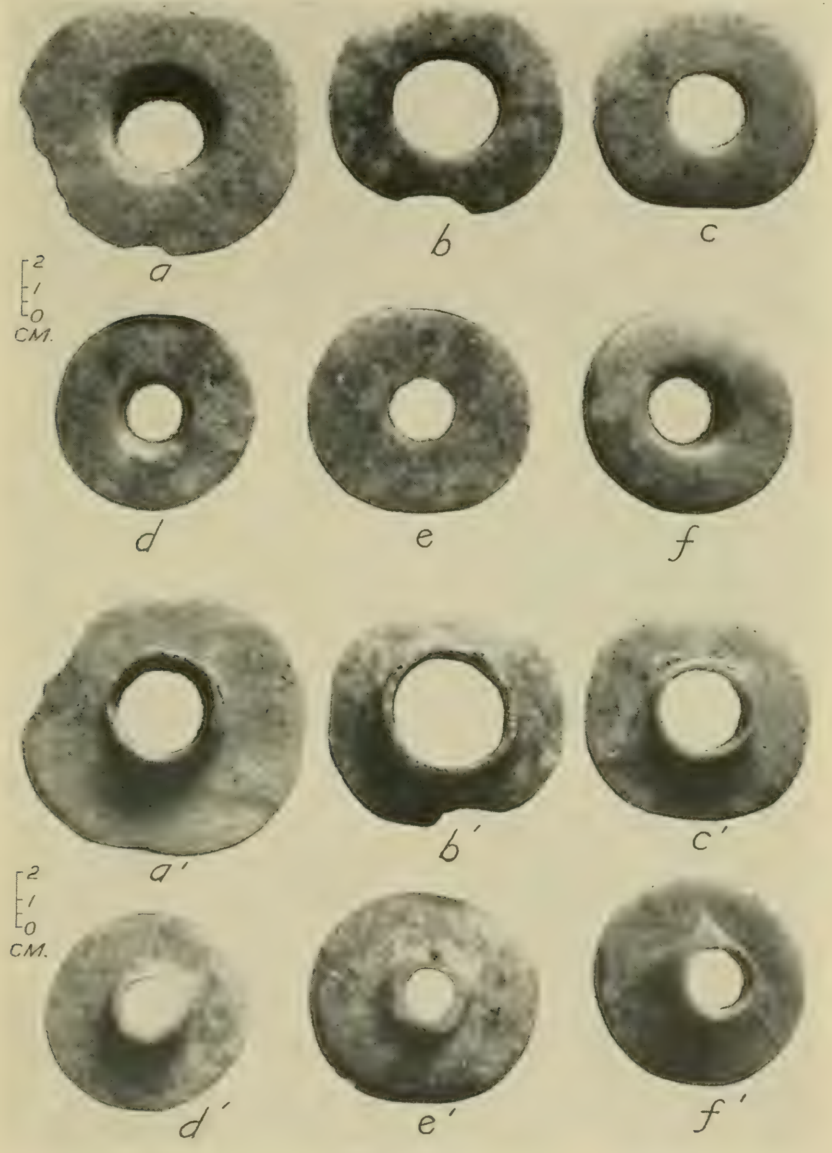
Plaques. *a*, convex, *a′*, concave, sides of clamshell-shaped plaque. Obverse of *b* is smooth and plain.


a
b
c
2
1
0
CM.
d
e
a′
b′
c′
2
1
0
CM.
d′
e′
a″
b″
c″
2
1
0
CM.
d″
e″

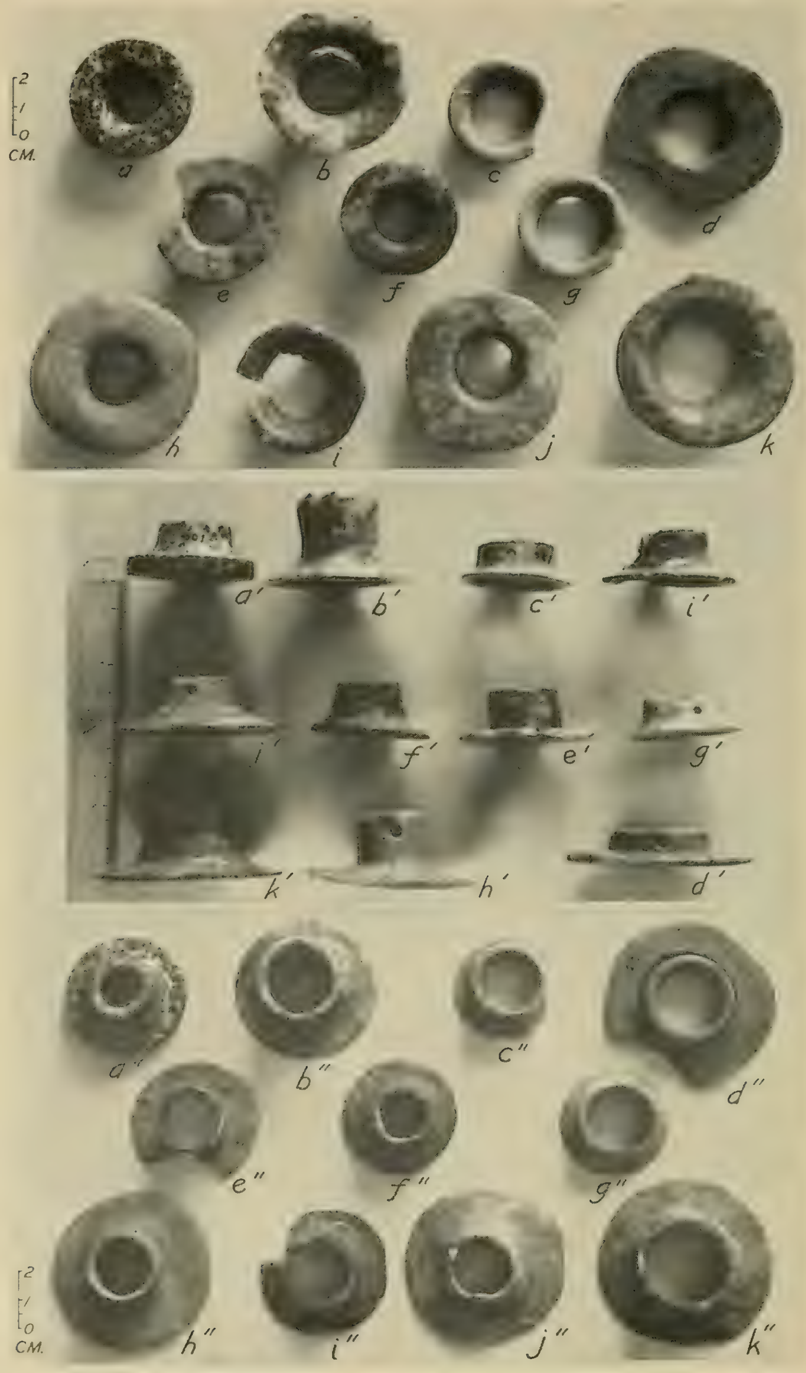
Earspool flares. (In pls. 41–54 the prime or primes after a letter indicate other views of the same specimen designated by the same letter.)


a
b
c
d
2
1
0
CM.
e
f
g
a′
b′
d′
2
1
0
CM.
c′
e′
f′
g′
a″
b″
d″
2
1
0
CM.
c″
e″
f″
g″

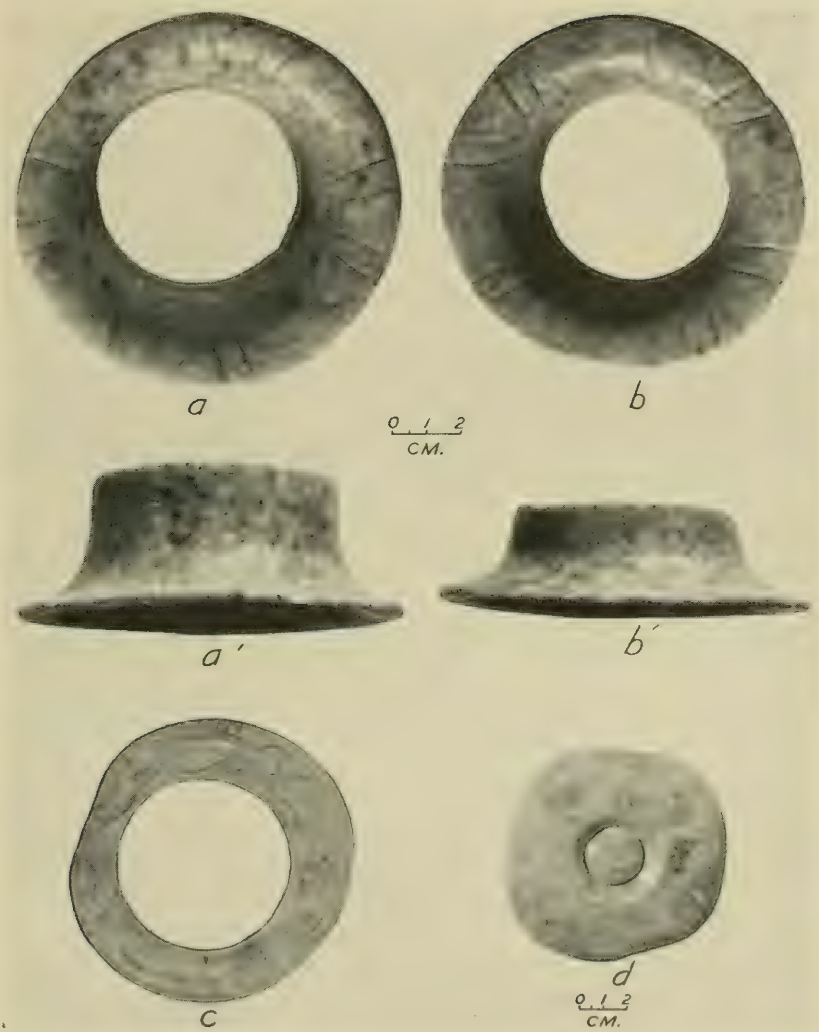
Earspool flares.


a
b
c
2
1
0
CM.
d
e
f
a'
b'
c'
2
1
0
CM.
d'
e'
f'

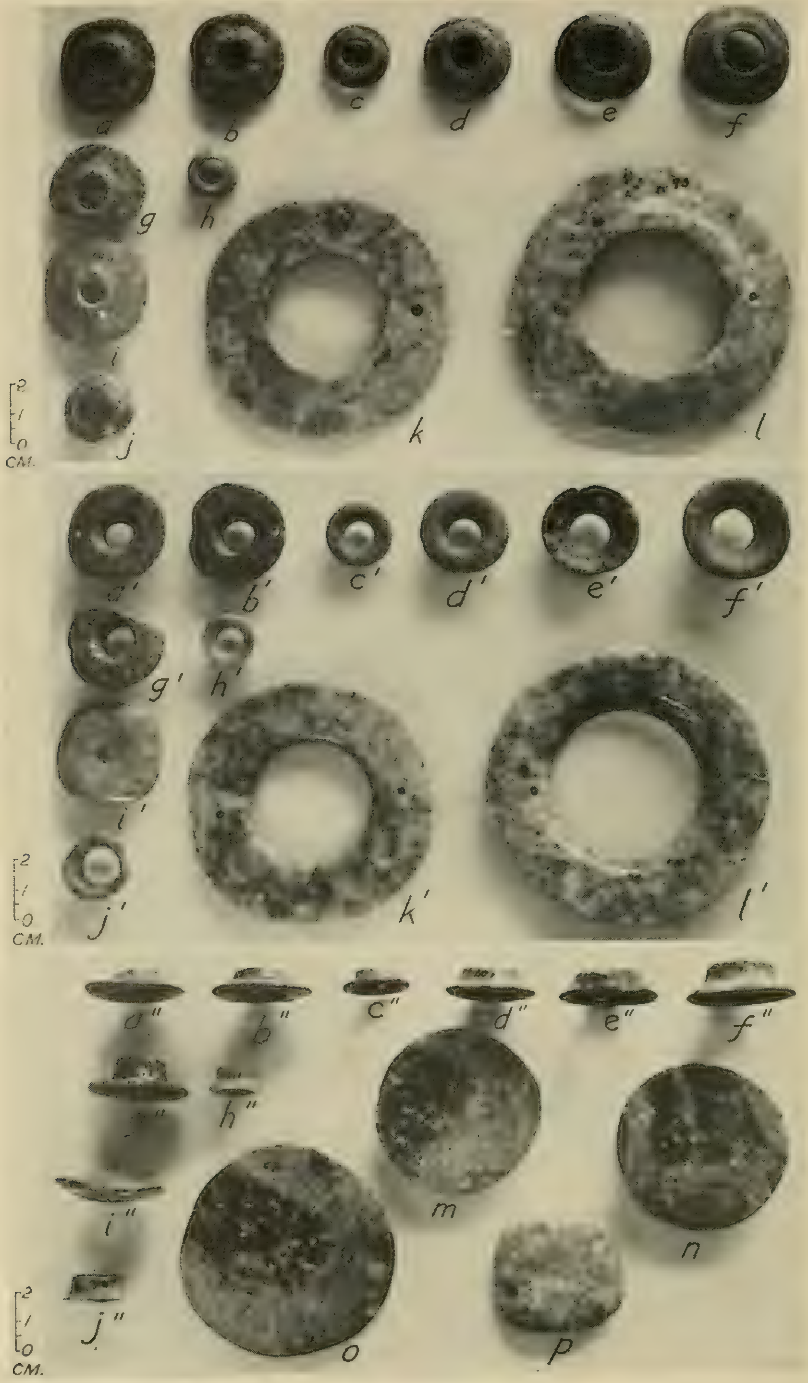
Earspool flares


2
1
0
CM.
a
b
c
d
e
f
g
h
i
j
k
a′
b′
c′
i′
j′
f′
e′
g′
k′
h′
d′
a″
b″
c″
d″
e″
f″
g″
2
1
0
CM.
h″
i″
j″
k″

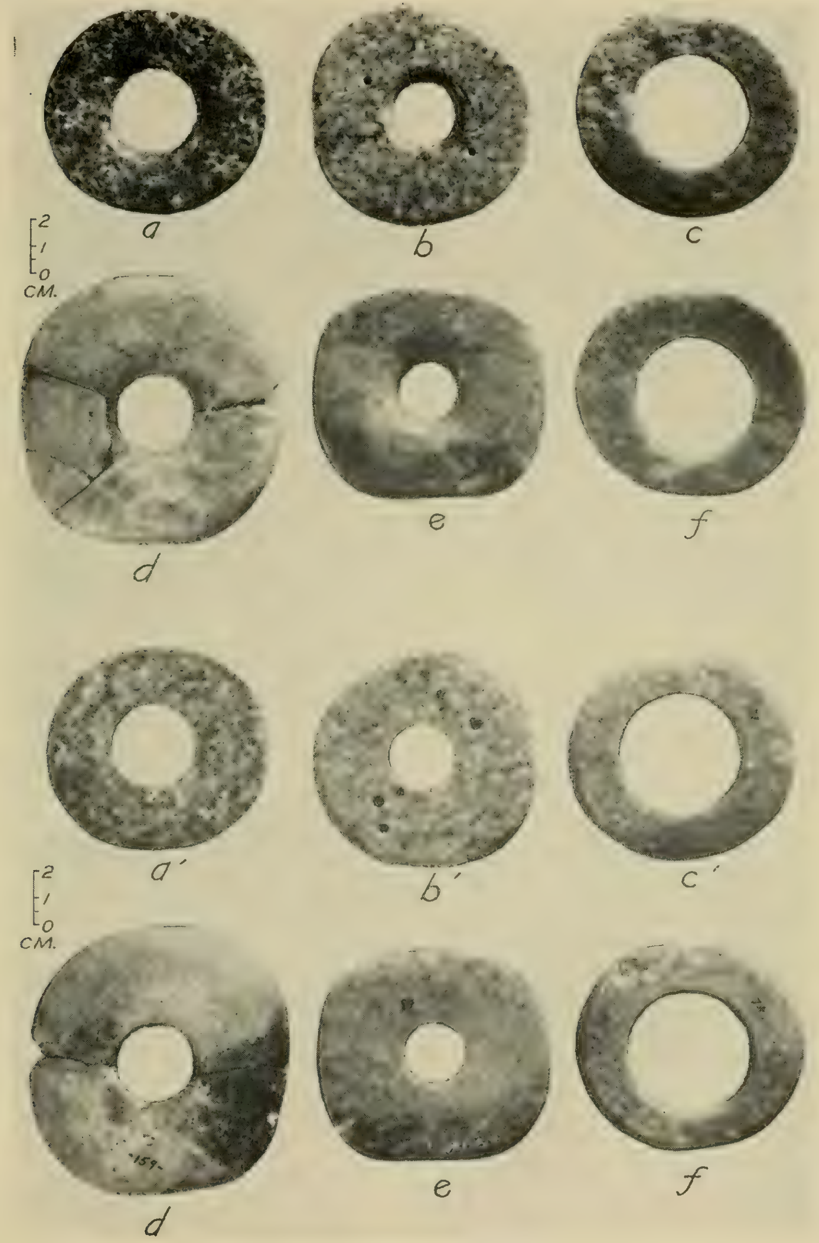
Earspool flares. (Note that, through the writer's error, the order of specimens shown in side view (middle photograph) was altered.)



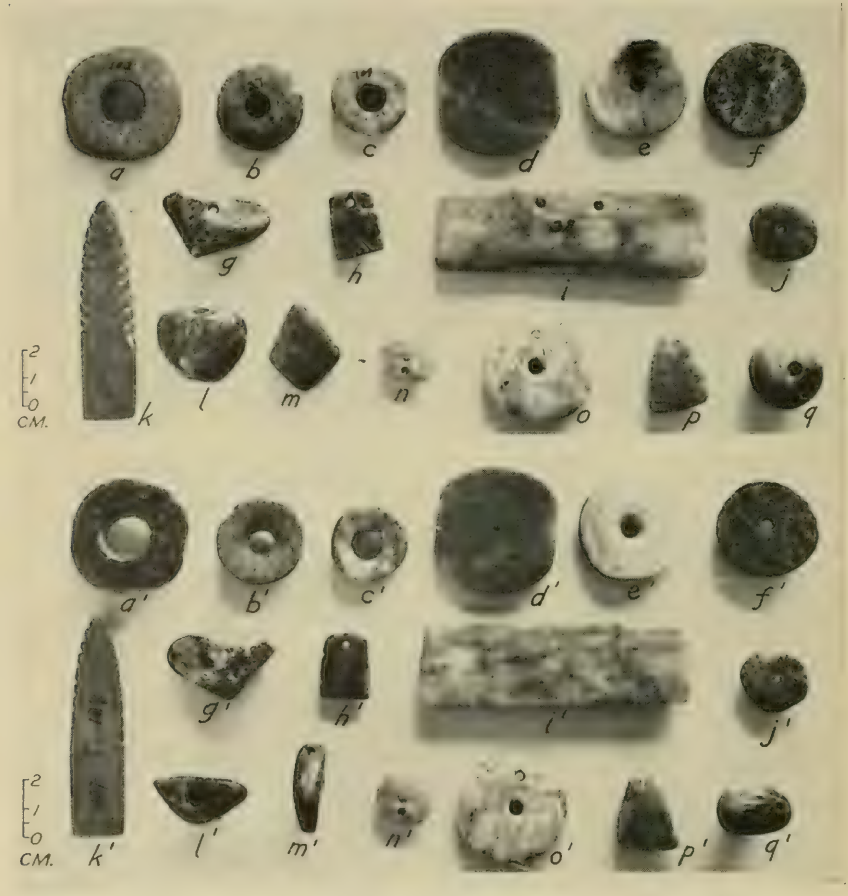
Earspool flares and decorated perforated disk. *a*, *a'*, *b*, *b'*, pair of decorated earspool flares; *c*, decorated perforated disk; *d*, one of pair of earspool flares found with throat disk in place. (*c*, Courtesy National Geographic Society.)


a
b
c
d
e
f
g
h
i
j
k
l
2
1
0
CM.
a'
b'
c'
d'
e'
f'
g'
h'
i'
j'
k'
l'
2
1
0
CM.
a"
b"
c"
d"
e"
f"
g"
h"
i"
j"
m
n
o
p
2
1
0
CM.

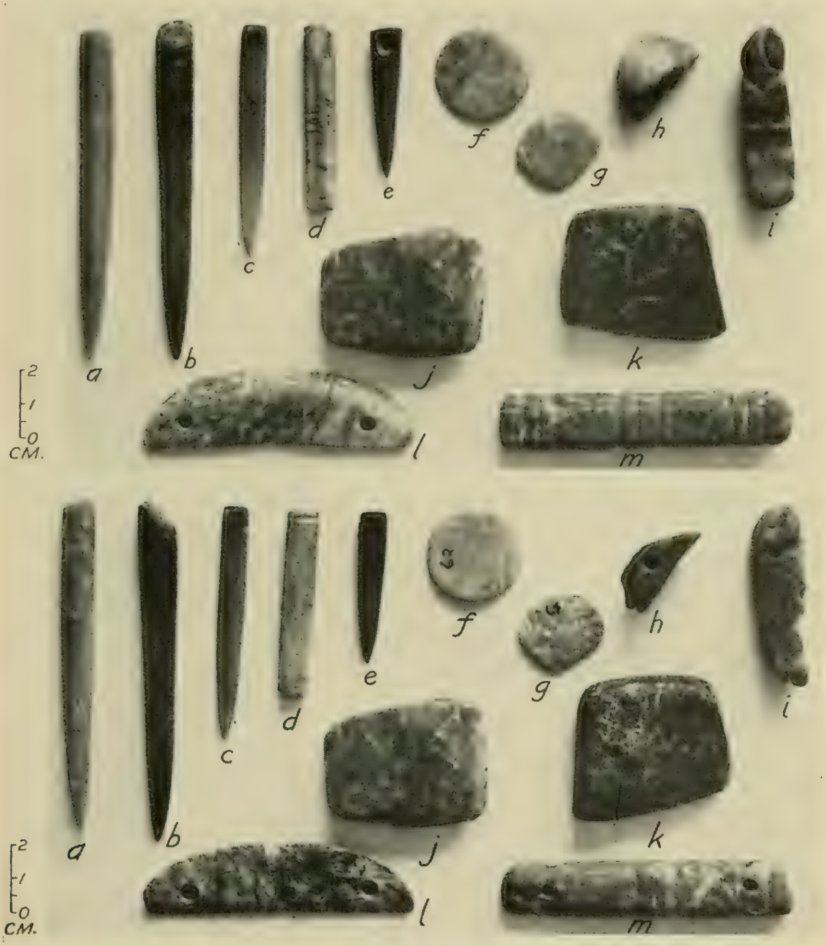
Small flares, perforated disks, and imperforate disks.


a
b
c
2
1
0
CM.
d
e
f
a′
b′
c′
2
1
0
CM.
d
e
f

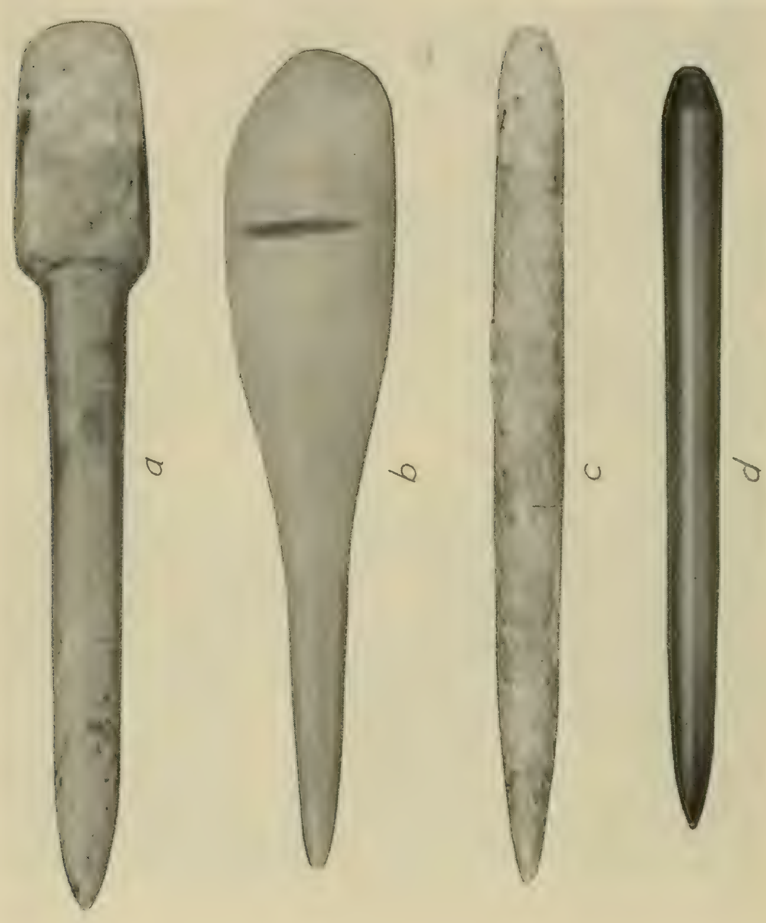
Disks with large central perforation.


a
b
c
d
e
f
g
h
i
j
2
1
0
CM.
k
l
m
n
o
p
q
a'
b'
c'
d'
e'
f'
g'
h'
i'
j'
2
1
0
CM.
k'
l'
m'
n'
o'
p'
q'

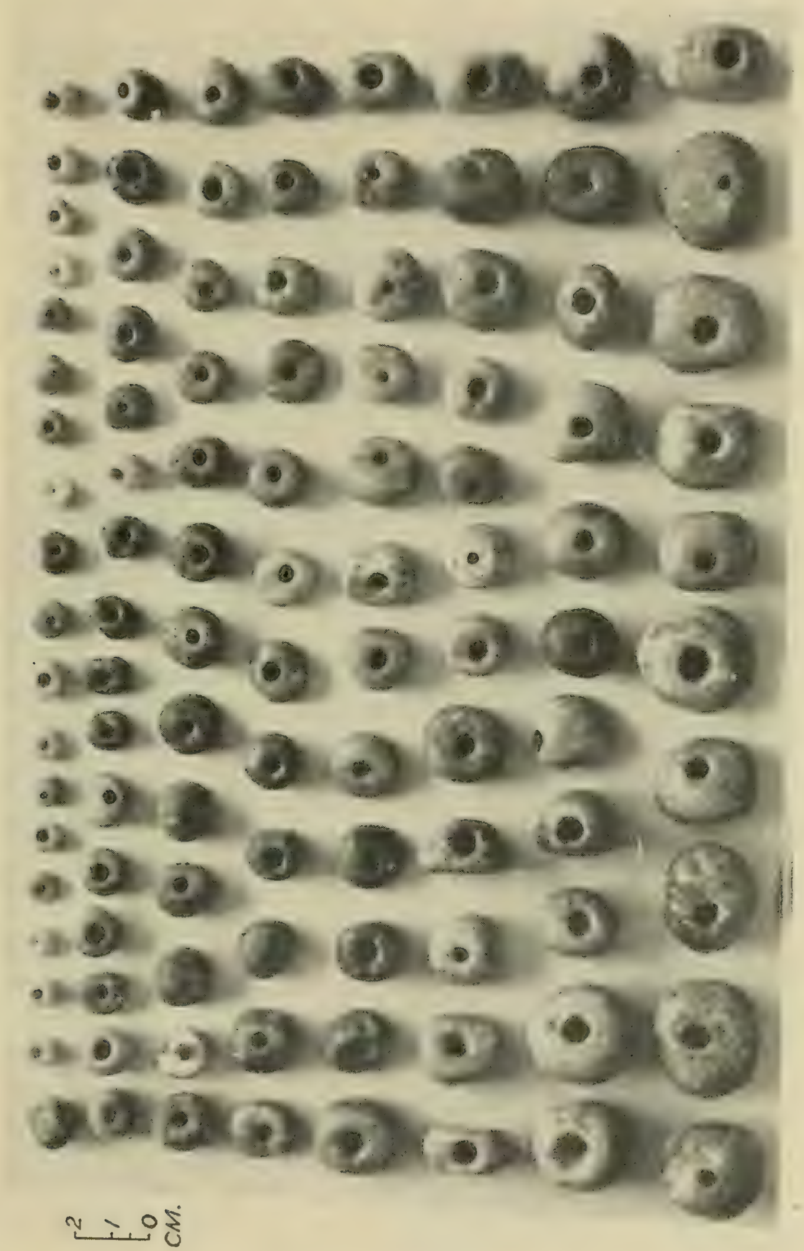
Miscellaneous objects.


a
b
c
d
e
f
g
h
i
j
k
l
m
2
1
0
CM.
a
b
c
d
e
f
g
h
i
j
k
l
m
2
1
0
CM.

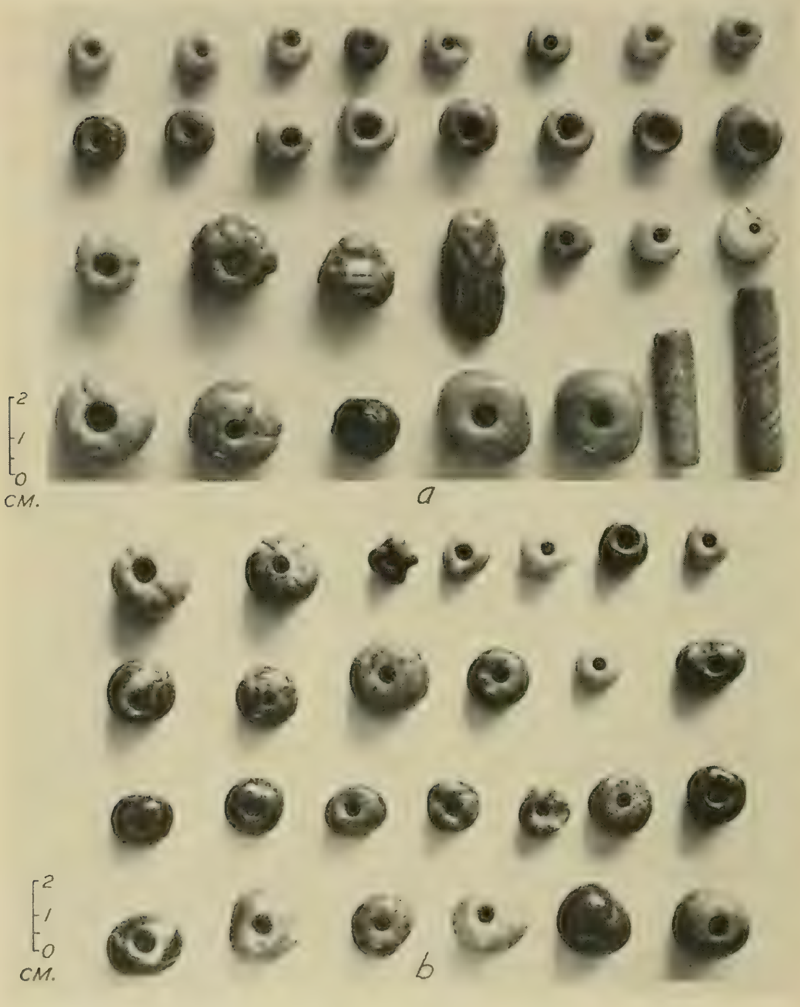
Miscellaneous objects. Lower group shows different view of same specimens indicated by corresponding letters in upper group (primes inadvertently omitted in makeup).



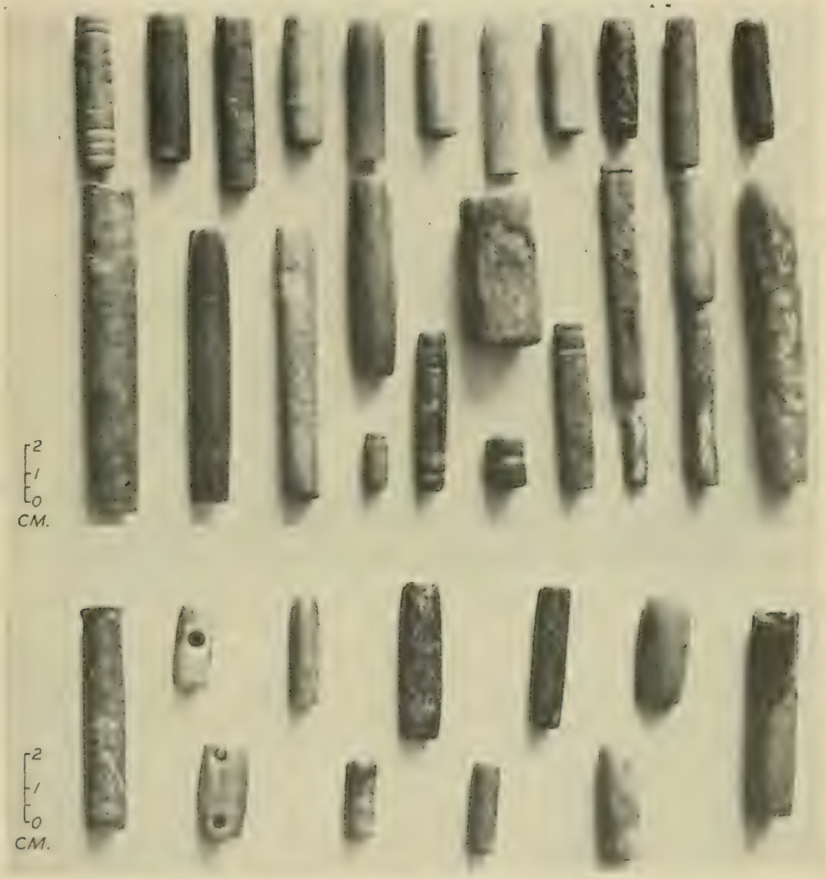
Ceremonial perforators (?). (Courtesy National Geographic Society.)



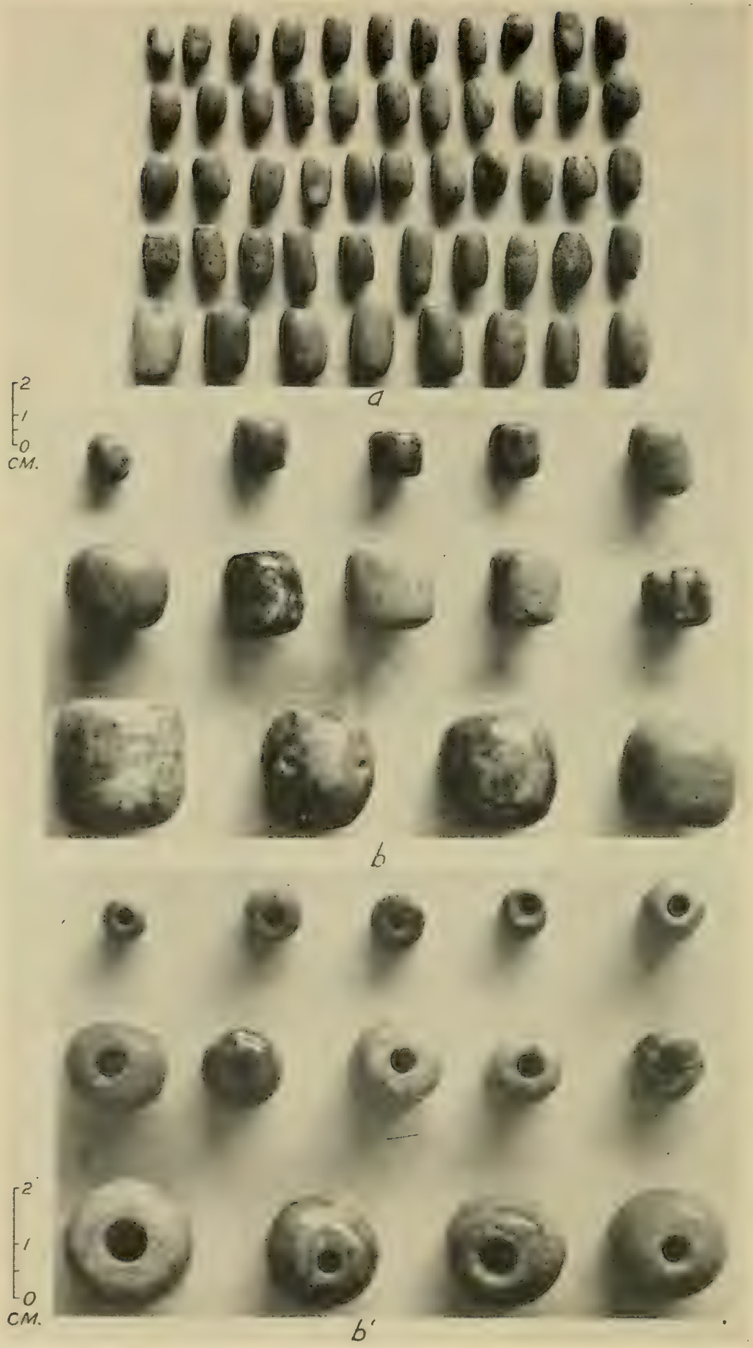
Subspherical and "pebble" beads.


2
1
0
CM.
a
2
1
0
CM.
b

Subspherical, gadrooned, tubular, "pebble," and miscellaneous bead types.


2
1
0
CM.
2
1
0
CM.

Tubular and barrel-shaped beads.


2
1
0
CM.
a
b
2
1
0
CM.
b′

Barrel-shaped, and short tubular beads.

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Bureau of American Ethnology
Bulletin 157

Anthropological Papers, No. 45

Archeological Materials from the Vicinity of Mobridge, South Dakota

By WALDO R. WEDEL

265191—54——11

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ARCHEOLOGICAL MATERIALS FROM THE VICINITY OF MOBRIDGE, SOUTH DAKOTA

By Waldo R. Wedel

INTRODUCTION

The archeological materials with which this report is primarily concerned were collected by M. W. Stirling, then assistant curator of ethnology, United States National Museum, during the month of June 1923. They originate chiefly from excavations at four burial sites which, with certain nearby and presumably culturally associated village sites, are located on the banks of the Missouri River between Grand River and Elk Creek, north of Mobridge, S. Dak. In addition to the archeological collections brought back from the field, there is in the Division of Physical Anthropology, United States National Museum, a series of skeletal remains from the same sites, representing approximately 110 individuals. A preliminary statement on the archeological findings has been published (Stirling, 1924), as have certain measurements of the skeletal materials (Hrdlička, 1927, pp. 60–66); but definitive reports have not been available.

Despite the lapse of nearly 30 years since these collections were gathered for the National Museum, they have lost no part of their interest or potential significance. In considerable part, they originate in a comparatively well-documented site which can be identified beyond cavil as Arikara, and whose period of occupancy (circa 1803–32) can be estimated with a possible error of not more than 3 or 4 years at the beginning and less than a year at the terminal date. These latest materials, fortunately, include perishable items that are seldom recovered from sites unprotected as these are against the vagaries of climate. Moreover, some of them can be checked against the remarkably exact pictorial evidence left us by Catlin and Bodmer, contemporary artists who saw in actual use, and faithfully painted, many of the objects about to be described in this paper. Other and obviously related materials are almost certainly from earlier sites, so that the entire series offers interesting insights into the changing culture of one of the foremost native peoples in this section of the Missouri Valley.

Finally, there is the fact that the cultural materials from all four sites are accompanied by well-preserved skeletal series; and since the series culminate in a historic Arikara population, itself a key group for racial studies in the Plains, the physical variability as seen in culturally related sites spaced in time ought to be of the highest interest. Strange to say, despite the demonstrable richness of this upper Missouri region for the study of human prehistory, no comparable body of data correlating cultural and somatological materials on the Arikara—or for that matter on any of their neighbors—has yet been published. All this, plus the stubborn fact that the Federal water-control program on the Missouri will all too soon efface a great proportion of the sites from which alone can come the basic data for study of human prehistory in the region, give an added timeliness to the present paper.

As will become apparent in the course of this study, I am under a heavy debt of gratitude to many individuals for their assistance. To Dr. M. W. Stirling, now director of the Bureau of American Ethnology, I am particularly obligated for his generosity in permitting me to study and publish the materials he collected, and for freely placing at my disposal his field records and other data. Dr. W. D. Strong, Columbia University, has been most helpful in extending advice on the location and nature of the sites involved, in furnishing me with maps for study, and in providing additional burial data collected by himself. Paul Cooper, field director of the Missouri River Basin Surveys, also aided me with maps, site information, and other materials, and, in addition, he was, perhaps unwittingly, in large part responsible for my undertaking this project.

To professional colleagues, anthropological and otherwise, at the National Museum, I am obligated for their unending patience in the identification of various materials and in guiding me through the maze of specialized data required in the analysis of the materials. Among these colleagues I wish to thank especially the following: John C. Ewers, Division of Ethnology, and M. T. Newman, Division of Physical Anthropology, with whom I have had numerous discussions that were uniformly to my benefit; E. P. Henderson, Division of Minerals; G. A. Cooper, Division of Invertebrate Paleontology and Paleobotany; H. A. Rehder and J. P. E. Morrison, Division of Mollusks; D. H. Johnson and H. W. Setzer, Division of Mammals; Herbert Friedmann, Division of Birds; Mendel L. Peterson, Department of History; W. N. Watkins, Section of Wood Technology; J. R. Swallen and A. C. Smith, Department of Botany; G. B. Griffenhagen, Division of Medicine and Public Health; and Grace L. Rogers, Section of Textiles. J. E. Anglim drew figure 12.

Outside the Museum, I have had the able assistance of S. P. Young and Raymond Gilmore, Fish and Wildlife Service; Glenn A. Black,

Indiana Historical Society, in the identification of trade beads; and of the Federal Bureau of Investigation in the identification of certain hair specimens.

Last but not least, to my wife, Mildred Mott Wedel, who read the entire manuscript and made suggestions for its material improvement, besides foregoing many things during the long evenings and week ends spent in its preparation, I am under especially heavy obligation.

THE ENVIRONMENTAL BACKGROUND

The Mobridge locale (see fig. 10) is in north-central South Dakota, roughly 1,275 miles above the mouth of the Missouri and at an elevation of about 1,500 to 1,800 feet above sea level. The region generally consists of rolling plains, once more or less completely grass-covered, with rugged hilly zones mainly along the dissected margins of the stream valleys. The Missouri winds through a flat-floored trench from 1 to 2 miles wide, bordered alternately by alluvial bottoms and by steep shale bluffs, some of which attain a height of nearly 300 feet. Stands of cottonwood, willow, oak, and other deciduous trees are found almost exclusively on the bottoms, the islands, and along the immediate stream banks. Three miles northwest of Mobridge, the Grand River joins the Missouri from the west; and 2 miles farther upstream, Oak Creek enters from the northwest. Both these tributaries, like the lesser creeks that join the mainstem from time to time, flow in tree-lined valleys. Some game animals still inhabit the wooded areas, but in greatly reduced numbers; and the larger forms, such as bison and antelope, are no longer found in the locality.[1]

Climatically, the Mobridge area is characterized by long, cold winters and hot, dry summers. Recorded temperature extremes range from −44° to 116°; and the frost-free growing season is approximately 100 days. Annual precipitation averages close to 16 inches, of which about two-thirds falls from June to September. Drouths, and resultant crop failures, sometimes occur.

As the above data suggest, the locality is one of some uncertainty from the standpoint of agriculture, whether native or modern. It is evident, however, that the challenge was more or less successfully met by the Indians throughout a period of as yet undetermined length, for within a radius of 10 miles of Mobridge there are 30 or more sites of semipermanent villages whose inhabitants probably subsisted partially on domestic crops. With a few exceptions, most of these still await systematic investigation and identification.

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[1] See Tabeau (Abel, 1939, pp. 55-98) for a first-hand description of the Missouri Valley and its natural resources in the early nineteenth century.

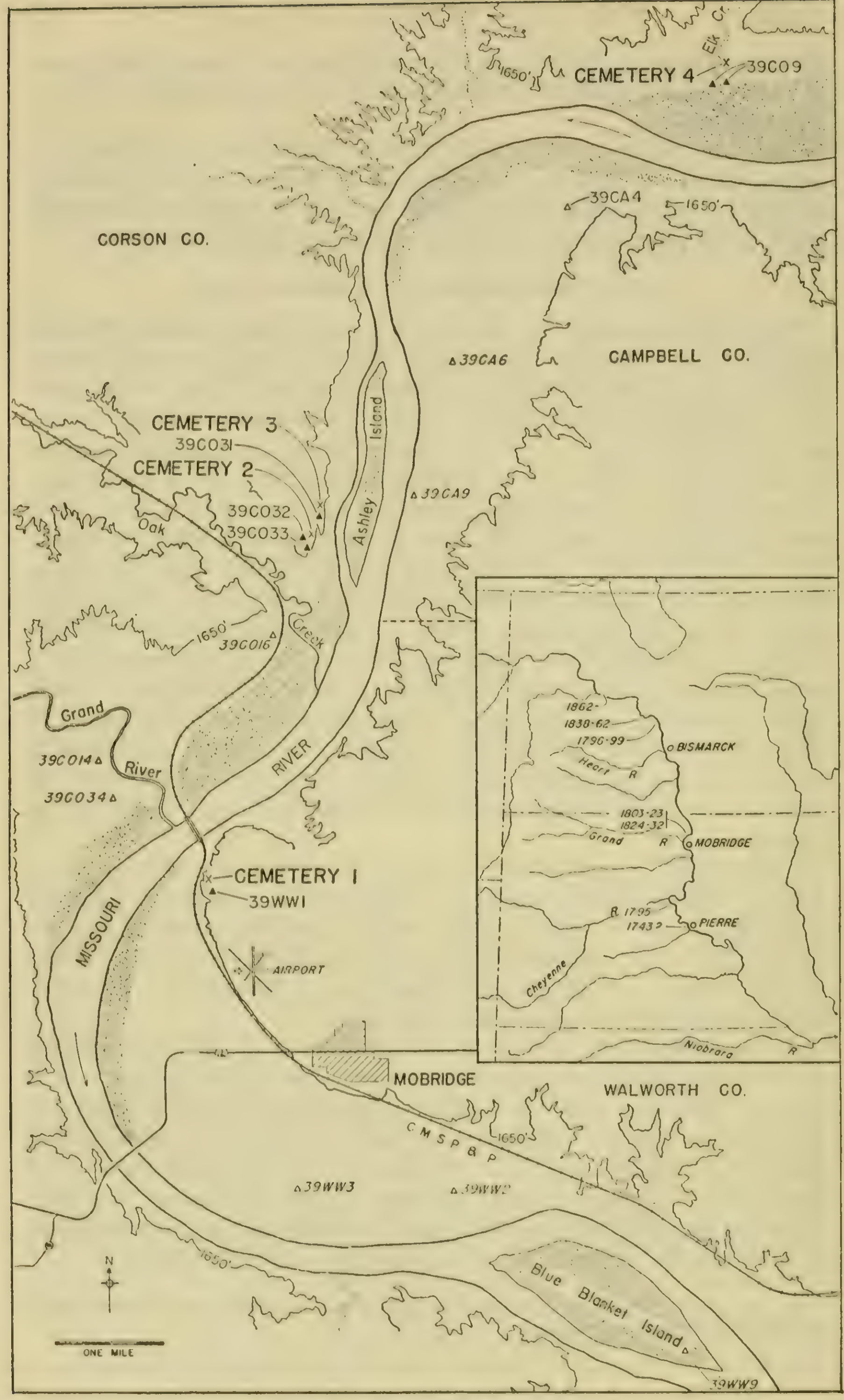
Elk Cr.
1650'
CEMETERY 4
39CO9
39CA4
1650'
CORSON CO.
CAMPBELL CO.
39CA6
CEMETERY 3
39CO31
CEMETERY 2
Ashley Island
39CA9
39CO32
39CO33
Oak
Creek
1650'
39CO16
Grand
River
39CO14
39CO34
RIVER
CEMETERY 1
39WW1
MISSOURI
AIRPORT
MOBRIDGE
WALWORTH CO.
C M S P & P
1650'
39WW3
39WW2
1650'
Blue Blanket Island
39WW9
N
ONE MILE
1862
1838-62
1796-99
BISMARCK
Heart R
1803-23
1824-32
Grand R
MOBRIDGE
R 1795
1743 ?
PIERRE
Cheyenne
Niobrara R

FIGURE 10. (For legend, see opposite page.)

RÉSUMÉ OF ARIKARA HISTORY

The history of the Arikara prior to the closing decades of the eighteenth century is very imperfectly known, and exhaustive treatment of the subject cannot be attempted here. Northernmost of the Caddoan-speaking peoples, they were also the last major group of that stock to come into direct contact with White chroniclers. The evidence of linguistics and tradition indicates that they were at one time in close association with the Skidi Pawnee, who resided in historic times in what is now east-central Nebraska (Wedel, 1936); but the time and place of separation remain uncertain. Inferentially, the split took place somewhere in the region south or southeast of the Niobrara River, from which area the Omaha claimed to have dispossessed the Arikara and forced them northward up the Missouri (Fletcher and La Flesche, 1911, p. 75). There is documentary evidence that the Arikara were established somewhere in present southern or southeastern South Dakota by the early eighteenth century.

Among the earliest, if not actually the first, comments pertaining to the Arikara are those by Bourgmond in 1717 and by Renaudiere in 1723. The former in 1714 ascended the Missouri as far as the Platte River of Nebraska; whether he subsequently went up still farther, or learned through hearsay of the tribes higher up, is not certain. At any rate, in an enumeration of the tribes residing along the Missouri, Bourgmond (de Villiers, 1925, p. 62) observed that above the Smoking River [2] (i. e., the Niobrara or White?) and the *Mahas blancs*, "one finds three villages called *Aricaras;* their commerce is in furs like all the other savages. They have seen the French and they know them . . . Still higher, on the said river, there are 40 villages of *Caricara;* they are on both sides of the river. They are very numerous . . . ." This information by Bourgmond is presumably the basis for certain representations on the Delisle map of 1718 (Paullin, 1932, pl. 24; Tucker, 1942, pl. 15), whereon the *Aricara* appear on the next northerly tributary of the Missouri above the *R. du Rocher* (probably the Big Sioux River; see Mott, 1938, p. 245) and *40 Villages des Panis* are shown to the west on the Missouri itself. The Renaudiere memoir, dated August 23, 1723 (Margry, 1886, vol. 6, p. 395), and probably not based on first-hand observation, merely notes that 10 leagues from the Mahas "you find the nations of the Ricaras; they are allied with the Mahas and wandering like them . . ." Needless to say, it is impossible to pinpoint the localities alluded to in the documents just cited.

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[2] ". . . s'appellent par les Sauvages *Nidejaudege*, que les Francais appellent la riviere Fumeuse; le sable volant comme de la fumee, et rend l'eau de la riviere toute blanche et boueuse. Elle est tres rapide et affreuse dans les grosses eaux . . ." (de Villiers, 1925, p. 62).

FIGURE 10.—Map showing location of burial sites (Cemeteries 1–4) investigated by M. W. Stirling in 1923, and some of the principal known village sites, in the vicinity of Mobridge, S. Dak. *Inset:* Some Arikara locations after ca. 1743.

For most of the eighteenth century, there seems to be little extant documentary material on the Arikara. Spanish traders ascending the Missouri apparently did not reach the tribe until the 1790's; and I have been unable to track down concrete information as to the nature and extent of Arikara contacts with French and English traders from the East and North. There are, to be sure, a few leads. When the elder Verendrye in 1738 visited the Mandan somewhere on the Missouri in present North Dakota, he was informed (Burpee, 1927) that "at a day's journey from the last of their forts were the Panaux, who had several forts, and beyond them the Pananis . . . " both of whom "built their forts and lodges in the same way in which they themselves [i. e., the Mandan] did . . ." Unlike the Mandan, both the Panaux and the Pananis, he was told, were provided with horses. Nearly 5 years later, in March 1743, Verendrye's sons spent 2 weeks with a people they called the Gens de la Petite Cerise, whose fort was situated "on the bank of the Missouri." They were informed that at a distance of 3 days' journey "there was a Frenchman who had been settled there for several years." Just before their departure for the Mandan towns, 16 days to the north, they buried an inscribed lead plate on an eminence near the fort. Discovery of this plate in 1913 on a hill near Fort Pierre, S. Dak., suggests that the village or fort of the Gens de la Petite Cerise, where the two younger Verendryes sojourned in 1743, may have been at one of the several archeological sites situated in the vicinity of Pierre. There is no conclusive proof, so far as I am aware, that any of the native peoples referred to by the Verendryes as the Panaux, the Pananis, and the Gens de la Petite Cerise were actually the Arikara; but such fragmentary data as are given regarding their mode of life seem to me to lend support to the view that the Arikara may well have been the people, or one of the people, about whom they were writing.

Concerning the location of the Arikara during the 40 years immediately following the Verendrye expeditions, I have found no eyewitness accounts. In 1785, Governor General Miro mentioned (Nasatir, 1930, p. 536) the "seven villages of the Arricaras or Riis . . . located along the Missouri nearly 400 leagues from its mouth. They are about 900 men-at-arms. . . . "[3] Lewis and Clark, writing in 1804 but referring to the same period as Miro, stated of the Arikara (Coues, 1893, vol. 1, p. 162) that " . . . They were originally colonies of Pawnees, who established themselves on the Missouri below the Chayenne [Cheyenne River], where the traders still remember that 20 years ago they occupied a number of villages. From that situation a part of the Ricaras emigrated to the neighborhood of the Mandans, with whom they were then in alliance. The rest of the nation continued near the Chayenne till the year 1797, in the course of which, distressed by their wars with the Sioux, they joined their countrymen near the Mandans . . ."

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[3] At 2.6 miles per league, Miro's estimate would place the Arikara near White River, which enters the Missouri from the west about 1,000 miles above the mouth of the latter. Bad River, variously known in earlier days also as the Teton or Little Missouri, joins the Missouri about 1,120 miles above its mouth; the Cheyenne enters at circa 1,170 miles.

Beginning in the final decade of the eighteenth century, the picture of Arikara movements becomes appreciably clearer, owing in large part to the activities of the Commercial Company for the Discovery of the Nations of the Upper Missouri, at St. Louis, and later to the numerous exploring, trading, and other expeditions that ascended the Missouri from time to time. For a semihorticultural village-dwelling tribe, the Arikara are seen to be at this period a surprisingly restless and mobile people. By 1795, they had been reduced by smallpox from 32 villages and "four thousand warriors," according to Trudeau (Beauregard, 1912, pp. 28–31), to two villages with "about five hundred fighting men," situated on the west (right) bank of the Missouri about 3 miles below the mouth of the Cheyenne.[4] From here the Arikara, or a considerable part of them, moved some 250 miles upriver to settle for a brief time a short distance below the Mandan villages near the later Fort Clark, N. Dak.[5] Somewhere in this locality they were visited the following year, 1796, by Evans, who said that the Arikara village was 10 leagues below the Mandan on the south side of the river, and that there was here a fort built 3 years before and continuously occupied by traders from Canada (Nasatir, 1931 b, pp. 450–451). A letter dated St. Genevieve, April 10, 1796, by James Clamorgan, director of the Commercial Company, speaks of the need for medals "for the two Ricara villages" (ibid., p. 455; cf. also Zenon Trudeau, Jan. 15, 1798, in Houck, 1909, vol. 2). Difficulties with the nearby Mandan caused the Arikara to move downriver again within a few years, but apparently not as far as the Cheyenne River. A clue to the time of this southward move is given by Lewis and Clark, who in 1804 near present Hensler, N. Dak., saw on the right bank of the Missouri, "two old villages of Ricaras, one on the top of the hill, the other in the level plain, which were deserted only five years ago" (Coues, 1893, vol. 1, p. 177). This date, if correct, would place the return of the Arikara downriver at about 1799.[6]

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[4] "In ancient times the Ricara nation was very large; it counted thirty-two populous villages, now depopulated and almost entirely destroyed by the smallpox which broke out among them three different times. A few families only, from each of the villages escaped; these united and formed the two villages now here, which are situated about a half a mile apart upon the same land occupied by their ancestors . . . [From Trudeau journal, 1795 (Beauregard, 1912).]"

[5] On their ascent of the Missouri in the fall of 1804, Lewis and Clark observed the remains of several recently abandoned villages which they attributed to the Arikara. These included: (*a*) one just above No Timber Creek [present Chantier Creek, Stanley County, S. Dak.] on the west bank of the river, where "the Panies had a Village five years ago"; (*b*) one about 5 miles below Cheyenne River, on the west bank, undated; (*c*) a walled village of 17 lodges on *La hoo catt* island [presumably present Lafferty Island, 4 or 5 miles below Cheyenne Agency], which " . . . appears to have been deserted about five years . . ." and where dwelt " . . . the Ricreries in the year 1797 . . ."; (*d*) a stockaded village of about 80 closely spaced lodges which " . . . appear to have been inhabited last spring . . .," some 5 miles below present Swan Creek, Walworth County; (*e*) a fortified village or "Wintering Camp" of about 60 lodges which " . . . appears to have been inhabited last winter . . . ," at or just below the mouth of Moreau River; and (*f*) the walls of a village, undated and not tribally identified, on "Grous Island" [present Blue Blanket Island?] 8 or 9 miles below Grand River (Thwaites, 1904–5, vol. 1, pp. 172–183).

During their descent in 1806, Lewis and Clark camped again just below No Timber Creek, and Clark's journal includes the following under date of August 25: ". . . a little above our encampment the Ricaras had formerly a large village on each side which was destroyed by the Seioux. there is the remains of 5 other villages on the S W side below the Cheyenne river and one on Lehocatts Island. all those villages have been broken up by the Seioux . . ." (Thwaites, 1904–5, vol. 5, p. 360). In his Summary Statement of Rivers, Creeks, and Most Remarkable Places, Clark records at 5 miles below Cheyenne River " . . . the upper of five old Ricara Villages reduced by the Seioux and abandoned . . ."

By 1803, the Arikara were settled in a group of three villages on the west side of the Missouri a few miles above the Grand River. Here, in October, 1804, they were visited by Lewis and Clark, who reported them living in three villages—one on an island (modern Ashley Island) 4 miles above Maropa River (now Oak Creek), the other two on both sides of a small unnamed creek 4 miles upriver. The island site was abandoned before 1811; according to Brackenridge (Thwaites, 1904–7, vol. 6, p. 111), its inhabitants had "removed a few miles farther up . . ."

The upper villages seen by Lewis and Clark had a somewhat longer existence. They were the principal residence of the Arikara when Bradbury and Brackenridge traveled up the Missouri in 1811. In August, 1823, in reprisal for Arikara depredations against Ashley's fur traders, the village was shelled by United States troops under Colonel Leavenworth; and in consequence, the Arikara again moved upriver to a point near the Mandan winter villages a short distance below the later site of Fort Clark (Maximilian, in Thwaites, 1904–7, vol. 23, p. 224). According to Dale (1918, pp. 85, 125), they were committing various outrages near the Mandan villages, as well as "in the Platte country" during the months following the shelling; and in the winter of 1825 the Ashley-Smith party ascending the Platte was informed that 100 Arikara were camped on the Arkansas River in present eastern Colorado. Maximilian, on the other hand, indicates that in the spring of 1824 they removed from the vicinity of the Mandan and apparently reoccupied the villages where they had been attacked by Leavenworth. They were still at this location in 1832 when Catlin, passing on the steamer *Yellowstone*, painted a view of the village, which he said contained 150 lodges incompletely surrounded by a palisade (Catlin, 1913, vol. 1, p. 229). Apparently, the site was permanently given up soon thereafter, for when Maximilian passed the spot on June 12, 1833, he said that ". . . it is not quite a year since these villages had been wholly abandoned . . ." Its abandonment was attributed by Maximilian to several factors: Arikara fear of the Sioux, their expectation of further chastisement at the hands of the Americans, crop failure due to drought, and the scarcity of bison.

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[6] I have attempted to reconcile the Le Raye journal of 1801–03 (Robinson, 1908, pp. 150–180) with the contemporary historical sources used in this sketch, but without success; and I am inclined to view with misgivings the account attributed to Le Raye.

For the next few years, the Arikara appear to have remained away from the Missouri, leading a nomadic life in the plains far to the west and southwest. They spent the winter of 1834–35 hunting with their Skidi Pawnee kindred on the upper Platte in Nebraska, returning in spring with the Skidi to their village on the Loup River northeast of present St. Paul, Nebr. By May 1835, when the two tribes had been living together for 8 months, friction between them had reached the point where the Skidi were contemplating driving away their unwelcome guests, 2,200 in number, according to Allis (Dunbar and Allis, 1918, p. 701). On learning of the imminent arrival of Colonel Dodge and his dragoons, the Arikara hastily departed to the west. Dodge subsequently was in council with them "about one day's march above the forks of the Platte River"; and in August, on his return trip to Fort Leavenworth, he met a party of Pawnee and Arikara at a Cheyenne village on the upper Arkansas (Dodge, 1861).

In 1837, the Arikara returned to the banks of the Missouri, this time to Fort Clark; and the following year they took over the nearby Mandan village whose original inhabitants had removed upstream following the devastating smallpox epidemic of 1837. Here they resided until the destruction of Fort Clark in 1861, after which they too moved farther upstream. In 1862 they were building a new village on the south bank of the river opposite Fort Berthold (Morgan, 1871; U. S. Office of Indian Affairs, 1863, p. 194) and from this point they finally moved across the river to join the Mandan and Hidatsa. In this general locality they have since resided.

Incomplete as they undeniably are, the historical data just reviewed have interesting implications for the study of Arikara history and prehistory. For one thing, they suggest that the Arikara villages until the last decades of the eighteenth century were mainly situated below the Cheyenne River. Moreover, with few exceptions, the historic allusions to occupied towns, as also to abandoned sites, by Trudeau, Lewis and Clark, Bradbury, Brackenridge, and others, place these features on the west (right) bank of the Missouri. For the most part, unfortunately, the references apply to a time after the smallpox epidemics of the eighteenth century had done their work, when the Arikara were said to be only a remnant of their former numbers.

We cannot be sure, of course, to what extent the Arikara and their early chroniclers inflated the estimates of the former numerical strength of the tribe. Archeology has already shown, however, that the remains of earth-lodge villages, both fortified and unfortified, some of very considerable size, and many with some traces of contact with White men, occur in great number along both banks of the Missouri throughout most of its course in present South Dakota. Some of these may have been temporary and late winter villages; at others, the Arikara may have been only the last of a series of occupations; and it is very probable that not all are to be ascribed to the Arikara. Granting these qualifications, the feeling still persists that a considerable number of these historically undocumented sites very likely are of Arikara origin. Unless it be assumed that, for environmental [7] or other reasons, the Arikara moved about as frequently in their earlier days as they did after 1790, which seems rather improbable, we then have the problem of segregating and accurately dating the village sites that belong to the heyday of the Arikara, whether in the early eighteenth century or, as seems possible, even earlier. Also to be evaluated is the role of the westward-pushing Sioux in forcing abandonment of the earth-lodge villages on the east bank—a factor that might have been of minor importance until the Arikara had been considerably reduced in numbers by smallpox. It would certainly seem to be more than mere accident that the historically documented villages and village sites ascribed to the Arikara do not include some of the many late prehistoric and protohistoric sites now known to exist along the east bank of the Missouri in South Dakota, as well as on both banks between the Cheyenne and Grand Rivers. I suspect that when further controlled data on the archeology and physical anthropology of the Arikara are available, it will be evident that they were, in fact, a numerous and powerful people with a long history of occupation of the Missouri Valley in what is now South Dakota.

Our primary concern here is with archeological materials from four burial sites situated north of Mobridge, S. Dak. Since these all yielded various quantities of evidence of Indian-White contacts, it is in order to comment briefly on the native settlements historically stated to have stood in the same locality. As already noted, these seem to have been three in number at the beginning of the nineteenth century; references to earlier villages, if such references exist, have escaped my notice. The documented locations include one island site, of which all traces have apparently vanished; and, 5 or 6 miles upstream, two nearly contiguous sites, variously known as the Leavenworth, or Lewis and Clark, Site. Contemporary observations were made at these villages by Tabeau, a French trader residing with the Arikara in the island village from 1803–5 (Abel, 1939); by Lewis and Clark in 1804; by Bradbury, and also by Brackenridge, in 1811; and finally, by Catlin in 1832 and Maximilian in 1833. To these eyewitness descriptions can be added a preliminary account of archeological excavations in 1932 by Strong (1933; 1940, pp. 366–370) at the Leavenworth Site. Strong's investigations, when published in full and supplemented by the present recounting of skeletal and cultural materials from the associated burial grounds, will give an unusually complete archeological check on Arikara material culture as described by the early White visitors to the occupied villages.

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[7] According to Tabeau, the Arikara "cultivate only new lands, being forced to change their habitation often for want of wood which they exhaust in five or six years. The Mandanes, also tillers of the soil, are more constant in their homes; because the timber begins to increase in their territory and the larger points are far better supplied with trees" (Abel, 1939, p. 69).

From the various contemporary accounts, it appears that the Leavenworth Site consisted of approximately 150–160 circular earth lodges placed without regularity in two groups about 80 yards apart, and on opposite sides of a small stream [now known as Elk or Cottonwood Creek]. Brackenridge says the village "appeared to occupy about three-quarters of a mile along the river bank . . ." According to Bradbury, it was "fortified all round with a ditch, and with pickets and palisadoes, of about nine feet high." Catlin reported this stockade in ruinous condition when he passed the town in 1832. Numerous horses were to be seen around the village, according to Brackenridge, who noted further that "amongst the Arikara, the dead are deposited in a grave as with us, which I think, clearly proves their origin to be different from that of their neighbors . . ." Catlin's painting in 1832 shows what appear to be poles on the summit behind the east part of the village, probably indicating the location of the burial ground.

Several of the early nineteenth century observers stated that the villages represented by the Leavenworth Site were inhabited by the remnants of formerly distinct bands of Arikara. According to Lewis and Clark, there were 9 or 10 such subtribes "who had formerly been Seperate, but by Commotion and war with their neighbours have Come reduced and compelled to come together for protection . . ." (Thwaites, 1904–7, vol. 1, p. 188). Elsewhere, they asserted that the two lower villages, evidently including the west half of the Leavenworth Site, were occupied by those Arikara who, sometime before 1797, had emigrated from the Cheyenne River locality to the Mandan, and who "may be considered as the Ricaras proper. The third village [on the east side of Elk Creek] was composed of such remnants of the villages as had survived the wars; and as these were nine in number, a difference of pronunciation and some difference of language may be observed between them and the Ricaras proper, who do not understand all the words of these wanderers" (Coues, 1893, vol. 1, p. 162.)

Brackenridge (Thwaites, 1904–7, vol. 6, p. 122) stated that ". . . These villages are the remains of 17 distinct tribes . . ."

As to the other three sites from which burial-ground materials are to be here considered, I have been unable to find any historical documentation. Two of these are on the west bank of the Missouri just above Oak Creek, which enters the Missouri below Ashley Island. The third is on the east bank about a mile northwest of the town of Mobridge. The evidence itself indicates that these are probably earlier than the Leavenworth material; but by how many years I have no means of determining at present.

TREATMENT OF THE DATA

In analyzing and presenting this material, I have been confronted with several problems that should be noted here. First and thorniest of all is the manner in which the collections were processed at the time of accessioning. The materials, as already indicated, are from four sites, but by no means in equal proportion. The permanent catalog record comprises about 150 cards, many of which pertain to lots rather than to individual specimens. The collection probably comprises in the neighborhood of 1,000 items. Unfortunately, in many cases the specimens were simply grouped into categories by material or type, assigned a single group catalog number, and then given no more detailed provenience data than "From grave," or "Found with infant burial," or even merely "Vicinity of Mobridge, South Dakota." Thus, it is often impossible to determine from which of the four burial sites involved a given specimen or group of specimens was taken.

This difficulty I have been able to overcome in part by painstakingly working through the field record and charting the artifacts found in association with each grave. Specimens of rare or unique type, or those which are distinctive for other reasons, could often be traced to their exact provenience. But in the case of other objects, as for example, certain glass beads, all specimens collected were strung or lumped together despite their certainly diverse origin, and it is now impossible to segregate those from any given site.

Faced with this rather discouraging situation, I have chosen to treat the entire collection by categories rather than by sites. Thus, the ceramic remains are considered as a unit, then the stonework, the bone, shell, etc. Wherever possible in the descriptive sections, I have indicated the origin of the specimens as to cemetery and, if feasible, as to grave. Table 2 (p. 169), generalized from a much more detailed working chart, indicates the distribution of specimens or materials by individual graves and cemeteries as determined from the field records; and if this table is consulted along with the descriptive text, the materials become much more meaningful.

Another problem involves the designation of sites. All of those from which material is included in this discussion have been variously designated from time to time. Largely for my own convenience, but also to minimize error in transcribing information from the field notes to this report, I have retained the simple numerical designations used in the field by Stirling. As already intimated, four sites are chiefly involved—three on the west (right) bank of the Missouri, in present Corson County, and one on the east bank, in Walworth County. Stirling refers to the village sites as Site 1, Site 2, Site 3, Site 4, etc. The burial ground presumed to have been associated with each of these was assigned the same number, that is, Cemetery 1 was near Site 1, Cemetery 2 near Site 2, etc. In other words, Cemeteries No. 1 to No. 4, as referred to hereinafter, correlate respectively with [Village] Sites No. 1 to No. 4, both series of numbers paralleling each other in serial order. On the accompanying map (fig. 10), the cemeteries are similarly designated from No. 1 to No. 4; but the presumably associated village sites have been assigned designations in accord with the system adopted by the Smithsonian's Missouri River Basin Surveys.

To facilitate comparison between the data contained in this report and those previously presented by other workers from named sites in the locality, I offer the following synonymy of site designations:

Stirling field notes	*Previous designations*	*Smithsonian Institution River Basin Surveys*
Site No. 1, and Cemetery 1	Mobridge Site	39WW1
Site No. 2, and Cemetery 2	Nordvold No. 2 and/or Nordvold No. 3	39CO32 and/or 39CO33
Site No. 3, and Cemetery 3	Nordvold No. 1	39CO31
Site No. 4, and Cemetery 4	Leavenworth Site; Lewis and Clark Site.	39CO9

In the next section, I have presented brief descriptions of each of the four principal sites and burial grounds from which the present materials were taken, based in part on Stirling's field notes and in part on relevant data from other sources. Accompanying each site description is a condensed summary of each grave opened and its contents, as described in the field record. Then follows the description of the artifacts, arranged according to material categories. The final sections are devoted to a recapitulation of the principal findings, to a discussion of some of their implications for upper Missouri Valley prehistory in terms of inferred cultural change, chronology, and human populations, and to the formulation of certain problems that seem to merit additional investigation.

I had hoped that it would be possible to include in this paper a condensed statement on the skeletal materials, based on a more penetrating analysis than that made by Hrdlička. The reexamination of the materials, however, has had to be deferred for various reasons, one of the reasons being the anticipated inclusion of measurements on another series of crania from Site 1. Pending completion of this expanded study, by M. T. Newman, I have included herein only a few provisional generalizations based largely on Hrdlička's observations.

SITES AND BURIAL DATA

In this section, all quotations are from Stirling's field notes unless otherwise credited. Catalog numbers are included in parenthesis wherever the specimens can be surely identified in the national collections. Numbers given for crania and skeletal parts refer to specimens now in the Division of Physical Anthropology (see also Hrdlička, 1927, pp. 60–66); those for archeological items refer to specimens in the Division of Archeology.

SITE 1 AND CEMETERY 1

Site 1 is located on the east (left) bank of the Missouri River less than a mile northwest of the Mobridge airport and a few hundred yards southeast of the Chicago, Milwaukee, St. Paul, and Pacific railroad bridge across the Missouri. Here, near the edge of the flat uplands overlooking the Missouri bottoms, and about a half mile from the river itself, middens and other village remains cover an area of several acres. Little systematic work, other than test-pitting, has been done in the occupational area, but tentative suggestions have been made regarding the cultural relationships of the village site (Strong, 1940, p. 380).

According to Stirling's field notes, the burial ground he examined and to which he assigned the designation Cemetery 1, was "located about 300 yards north of the village [site], on the crest and slope of the bluff overlooking the river." An excellent map of the site, prepared in 1932 and kindly made available to me by Strong, indicates that burials have been found on knolls immediately to the west of the occupational area and also on a "Burial Hill" some 300 yards to the south. Unless Stirling's notes are in error as to the direction of his excavations from the village site, it would appear that the cultural and skeletal materials he collected in 1923 came from a cemetery area not included on the map prepared for Strong's work.

Burial methods at this site (Cemetery 1) differed from those at the other sites investigated in the vicinity, according to Stirling. The graves opened usually showed secondary interment, that is, burial of the disarticulated bones after exposure of the corpse. All the graves, apparently, contained the remains of more than one individual; and in many or most instances, the bones were more or less broken up and in a poor state of preservation. Artifacts in association with the burials were very scarce.

Eleven graves were opened at Cemetery 1. For one, there are no data regarding the findings. Of the remaining 10, 1 each had the remains of 8, 6, and 4 individuals; 2 each contained the parts of 5 and 3 persons; and 3 each had the remains of 2 individuals. According to the field records, therefore, a total of 40 individuals was represented in the results of this project. They included 5 infants, 2 children, 2 adolescents, 15 adult males, and 16 adult females.

Of the 10 graves for which there are field data, 4 (Nos. 1, 4, 5, and 7) contained no artifact materials whatsoever. Among the others, mortuary accompaniments were few and unexciting. They included: some red paint and two stone balls from Grave 2; a few glass beads around the head of an infant in Grave 3; potsherds and flint chips in Grave 9; red paint from a child burial in Grave 10; and a "fungus-like mass (tinder?) in which was embedded a white arrowhead (by knee)" in Grave 11. In addition, one of three male skulls in Grave 8 "was discolored by copper."

None of this material is particularly diagnostic, except insofar as the glass beads and possibly the copper stain suggest contacts, direct or indirect, between the natives buried here and white traders. The scarcity of grave goods of any kind, as compared to the relatively large quantities recovered at the other nearby burial sites worked, suggests an earlier time period for Cemetery 1. Possible confirmation of this inferred time difference lies in the variant burial methods exhibited here. Grouped secondary or communal burial is known to have preceded primary interment in the Pawnee area of Nebraska, and it is possible that a similar change in custom took place here in the Mobridge area. Alternatively, there is also the possibility that we are concerned here with another group than the Arikara, and that the deviant methods here shown represent tribal variations rather than time differences. For reasons to be discussed later, this seems to me the less likely alternative.

Descriptive notes on the individual graves and their contents at Cemetery 1 follow.

Grave 1.—This grave contained the skeletons of an infant, a young child, and an adult male (USNM 325388). The infant was near the surface; the child just above the body of the man, who was on the bottom of the grave, flexed and facing south. The bones were not disarticulated.

Grave 2.—Near the surface were the badly decomposed bones of three infants. At a depth of about 3 feet, four adult skulls (three male (USNM 325434, 325435) and one female (USNM 325398)) were encountered in close proximity but not in a nest. Two of the male skulls were without their lower jaws. At a depth of 5 or 6 feet, the remainder of the bones were encountered in a somewhat disarticulated condition. Scattered throughout the earth which filled the grave were the charred remains of a fifth adult male.

By the shoulders of the deepest burial, a male, were found some red paint and also two stone balls, each about an inch in diameter. One of the male skulls rested upon a large piece of buffalo skull and had a piece of wood wedged between the teeth. Another, minus the lower jaw, rested on a section of human tibia obviously from another individual.

Grave 3.—This grave contained the bodies of a female (USNM 325394) and an infant (USNM 325413). They were flexed, facing south, the adult lying on the side, the skulls touching. A few glass beads were scattered about the head of the infant.

Grave 4.—This contained the bodies of two adult females (USNM 325392, 325393), one superimposed over the other. There were no artifacts.

Grave 5.—This contained the bodies of six adult females (USNM 325399, 325417, 325423, 325427, 325432). The grave was about 6 feet deep. The lowest burial was obviously secondary, the long bones being neatly piled together with the skull placed near them. One of the skeletons was headless.

The two lowest skeletons had the heads joined to the rest of the bodies. They were lying on the right side, head to the north, facing west. Three skulls were scattered through the earth above these bodies; and above these, the incomplete and fragmentary skeletons belonging to the three skulls. The very badly decomposed remains of another individual were found just below the surface.

Grave 6.—No data.

Grave 7.—About 3 feet below the surface lay two skulls, side by side and facing south. They were those of an adult female (USNM 325400) and an adolescent (USNM 325411), the latter with the teeth removed post mortem. A foot below the skulls were the other bones, broken and scattered.

Grave 8.—This grave contained the remains of three adult males (USNM 325395, 325396) and two adult females, together with scraps of bone from other individuals. The lowermost skeleton was headless. The skull of one of the males was discolored by copper, but this had evidently taken place before burial. The heads in each case were to the north.

Grave 9.—This held the remains of three adult males (USNM 325390, 325391) and an adolescent. The bones were fragmentary and scattered. No. 3 had a lower jaw but no skull (adolescent). By the leg of No. 2 were found some flint chips and a potsherd.

Grave 10.—This contained two adult males (USNM 325425, 325433), two adult females (USNM 325415, 325422), and a child (USNM 325402). The bones were fragmentary and much scattered. The lower jaws were absent from one male and one female. The skull of the child was covered with red paint.

Grave 11.—One female (USNM 325389) and two males (USNM 325397, 325418), all lying semiextended with heads together. In the hand of one of the males was a funguslike mass (tinder?) in which was embedded a white arrowhead (by the knee).

SITE 2 AND CEMETERY 2

Site 2 is a large occupational area, apparently representing actually two village communities, known also as Nordvold 2 (39CO32) and Nordvold 3 (39CO33). Located about 3 miles, airline, north and slightly east of our Site 1, and on the opposite (right) bank of the Missouri, it is on an upland tongue in the upper angle formed by the junction of Oak Creek valley with the main trench of the Missouri. The southernmost portion of this area, Nordvold 3, is partially enclosed by a ditch. North and northwest of this, house pits and village refuse occur over a considerable area marked near its north edge by what appears to be another defensive ditch curving from the Oak Creek side of the upland tongue to the Missouri Valley edge. This larger area is known as Nordvold 2. Strong informs me (letters of February 13 and April 3, 1951) that these two village sites seem to be of dissimilar age, Nordvold 2 apparently being prehistoric or protohistoric Arikara (?), and Nordvold 3 perhaps protohistoric or historic Arikara. This would make Nordvold 2 the older site.

The burial ground from which were taken the materials ascribed by Stirling to his Cemetery 2 lay along the edge of the uplands just east of Nordvold 2, overlooking a small timbered ravine and, beyond that, the Missouri River. Since there seems to be a cultural and time difference between Nordvold 2 and Nordvold 3, it is thus possible that Stirling's burial ground finds include materials that are not all of the same tribal or temporal origin. If they are such a mixed lot, however, I can see no way of determining at this writing which of the graves dug by Stirling should be ascribed to Nordvold 2 and which to Nordvold 3. We shall return to this problem in a later section.

The burials in Cemetery 2 differed in nearly all particulars from those in Cemetery 1. Single interment was here the rule; of 39 graves, only 8 contained more than 1 burial and none more than 3. In one or two, the remains lay barely beneath the ground surface; others were in dug pits as much as 5 or 6 feet deep. Characteristically, the bodies were covered with driftwood, presumably to give them and the accompanying objects some protection against the superincumbent earth. This was accomplished by setting two upright poles in the corners at one end of the grave, with a crosspiece extending between them, and then leaning against this support sloping poles covered with smaller sticks and brush. In a few instances, a series of fairly heavy logs up to 15 or 20 cm. in diameter were laid side by side against the end frame, and the brush covering was dispensed with. The field notes say that the "uprights [were] usually absent," in which event I presume the ends of the sloping timbers or poles were set directly against the end of the grave pit. Field stones were occasionally placed on the surface of the grave, with "generally a single good-sized rock sunk in the soil over the head."

There seems to have been no fixed manner of placing the body in the grave, but "normally the body was placed on the right side, head to the north, facing east, the head somewhat higher than the rest of the body. There are many exceptions to this general rule. Some are laid flat on the back at full length, some face down. The hands are placed by the head, along the sides, or folded over the abdomen."

Artifacts accompanying the burials were usually placed back of the head and on the same level with it. Where they occurred in the hand, by the side, or near the feet, these were usually in addition to others placed back of the head. Red paint was almost invariably present; less common were pigments of other colors, such as yellow, purple, white, and black. In several instances, the bodies had evidently been laid to rest in leather or cloth garments and with a wrapping of bison robes; and here the skeletal remains were usually in very poor condition. Usually, there was no indication of a grave lining; but the bottoms of several graves were lined with ashes.

It is of interest to note that the burials of infants and children, though decidedly in the minority as compared with adult burials, included some of the best-stocked graves opened. Thus, while small infants sometimes were given short shrift, children seem in general to have been buried with considerable care and with an unusual number of personal property items.

Of the 39 graves opened in Cemetery 2, 2 contained the remains of three individuals each; 6, the remains of two individuals each; and the remaining 31, each a single burial. These 49 individuals break down into the following categories: 5 infants, 6 small children, 3 adolescents, 18 adult males, and 17 adult females.

Tabulation of the data in the field notes regarding mortuary accompaniments indicates that these were considerably more abundant than was the case in Cemetery 1. For nine graves (Nos. 12, 14, 20, 24, 25, 31, 33, 35, 37) no associated artifacts are listed, although in at least three of these there were sherds in the fill above the skeletons. Six or eight others were accompanied only by paint, a few beads, or other comparable small items, which, it will be remembered, was about the extent of the accompaniments in the few furnished graves in Cemetery 1. Most of the remaining graves were much better stocked, with various quantities of items of stone, bone, shell, leather, wood, copper, iron, and glass. Interestingly enough, the only pottery vessels found were two small bowls with the burial of a child in Grave 3; and although infants, children, and adolescents together comprised a smaller number of graves than did the adults, they included some of the best-stocked and most interesting graves found.

Condensed field data on the individual graves in Cemetery 2 follow.

Grave 1.—Two adult females (USNM 325355, 325356), each lying on the right side, body flexed, hands drawn up to the face. A quantity of red paint by the head of No. 1.

Grave 2.—Adult female (USNM 325357), lying on right side, head to north, legs flexed. By the head were: a lump of potter's clay; two copper knives; a highly polished spatulate bone tool, engraved and stained green, evidently by copper; one *Olivella* shell bead. On the arms were five iron bracelets.

Grave 3.—Young child (USNM 325408), body tightly flexed. By the head were two flat catlinite ornaments, one disk-shaped, engraved, and perforated in the center (USNM 325526), the other shaped like the cross section of an hourglass and decorated with a few engraved lines (USNM 325527); two small pottery vessels, one decorated and one plain; a perforated elk tooth; six disk-shaped shell beads about one-half inch in diameter; and a copper knife. The head rested on a large pottery fragment. In the soil surrounding the body were a large number of large porcelain beads of many different sorts.

Grave 4.—Adult female (USNM 325358), body flexed, lying on right side, hands by the knees, head to the north. On each arm, two iron bracelets. Back of the head, a *Unio* shell, copper knife, and incised bone spatulate implement 10 inches long (USNM 325510; pl. 60, *f* (?)).

Grave 5.—Adult female (USNM 325359), body flexed, head to the north, depth about 4 feet. A broken bone hoe by the head, also some red paint.

Grave 6.—Adult male (USNM 325360); body lying on right side, facing southwest, body straight, knees flexed. The head rested on a cache of stones consisting of three large obsidian flakes, two flint flakes, and a water-worn piece of quartz crystal.

Grave 7.—Adult female (USNM 325361); body flexed, facing southwest, depth about 4 feet; red paint by the head. Just above was the body of an infant; by its head was a catlinite gorget (USNM 325528), about 2 inches in length, hourglass shaped, with corners minutely perforated, the edge grooved, and incised designs on each side.

Grave 8.—Adult male (USNM 325362); body flexed, lying on right side, head to north. In front of the face were seeds and tobacco; back of the head, a large quantity of yellow paint and some ashes; the head lay on a large crude flint implement.

Grave 9.—Adult male (USNM 325363); feet placed higher than head, which was lying face down. Some red paint on the head.

Grave 10.—Adult male (USNM 325364). Large quantities of red and white paint by the head. Back of the head were: four obsidian flakes; two round white pebbles; a quartz crystal; a flint knife; a copper knife; a lance head; several copper beads; a bone tube made from the leg of a heron; a *Unio* shell; an eagle claw; a prairie dog jaw; and an arrow straightener with three holes. By the right side and close to the right hand was a mass of purple paint and six polished bone gaming tubes (USNM 325556). Fragments of the leather garments surrounding the body remained, and pieces of white paint were scattered throughout.

Grave 11.—Adult male (USNM 325365), senile, depth 4 feet. Back of the head were placed 12 *Olivella* shell beads, a large *Unio* shell, and four heron beaks.

Grave 12.—Adult male (USNM 325366), depth about 5 feet. No paint or other accompaniments.

Grave 13.—Adult female (USNM 325367), depth 4 feet. By the head, much red paint in which was embedded a polished and engraved bone spatulate tool; by the right knee, a flint knife and a flint scraper.

Grave 14.—Adult male (USNM 325368). No artifacts.

Grave 15.—Adult male (USNM 325420); shallow burial, not much more than a foot beneath the surface; no wood covering. By the head, a bone knife.

Grave 16.—Adult male (USNM 325369); depth 5 feet; head rested on right hand, with left arm extended along the side. By the head four *Olivella* shell beads.

Grave 17.—Adult female (USNM 325370), with young child by the side. Back of the head of the adult, a long cylindrical shell bead.

Grave 18.—Adolescent; depth about 4 feet; the "body had been wrapped in a buffalo robe, evidently, the fragments of this and of the leather costume worn, were preserved, as was also the remains of a skin pouch decorated with copper bangles." Along the right arm there were "seventeen strips of bark, each about three inches in length and one quarter inch wide, wrapped in porcupine quill" (USNM 325538).

Grave 19.—Adult female (USNM 325371); depth about 3 feet; the body "was in the usual position, the right hand by the head holding a Unio shell filled with red paint." Back of the head, a large shell disk perforated in the center (USNM 325539), and a single white porcelain bead. Around the left arm, a copper-wire bracelet. About the pelvis were "the bones of an unborn child."

Grave 20.—Adult male (USNM 325372); depth about 4 feet; body lying on back, face upward, knees flexed in such manner that they were the first bones encountered. No artifacts; grave bottom lined with ashes, particularly abundant about the feet.

Grave 21.—Adult female (USNM 325373); depth about 2 feet; body of an infant placed on the left side so that the two skulls touched. Back of the head of adult was a mass of red paint in which was embedded a triangular white stone about an inch in length, and a number of squash and wild-cherry seeds. Scattered throughout the earth covering the body were many fragments of a pot, and a Unio shell.

Grave 22.—Adult female (USNM 325374); lying on the back with knees high. Back of head were a quantity of red paint, three tubular copper beads, and a polished bone spatulate tool.

Grave 23.—Adult male (USNM 325375), depth about 3 feet; body "placed in the usual position, the arms extended along the sides"; by the head, five small iron rings, four copper beads, and a cache of stone chips.

Grave 24.—Adult male (USNM 325376); depth 4 feet; the body "in the usual position but with no accompanying artifacts."

Grave 25.—Adult male (USNM 325377); depth of 5 feet; normal position. No artifacts, although the soil over the body contained a number of potsherds.

Grave 26.—Adult male (USNM 325378), depth 3 feet. The body had been wrapped in buffalo robes. Back of the head were two flint knives; two large shell beads; two oblong stone beads about 2 inches in length, one perforated longitudinally, the other undrilled; two heron beaks; and a bone spatulate tool.

Grave 27.—Infant; depth about 3 feet. Around the body, 27 large and 50 small *Olivella* shell beads, and a large quantity of small blue and white glass beads.

Grave 28.—Adult female (USNM 325379); depth about 3 feet. Under the head, four large cylindrical shell beads.

Grave 29.—Infant; depth 3 feet. "The leather costume which covered the body was profusely ornamented with copper beads and small copper bells . . . [and] . . . was partially preserved by the action of copper salts. . . ." Back of the head, 7 *Olivella* shell beads, a perforated bear claw, and a highly polished chalcedony pendant about 2 inches long.

Grave 30.—Young child (USNM 325414); depth about 3 feet. Back of the head, a mass of red paint.

Grave 31.—Adult female (USNM 325380); "Back of the head the body of a young child was placed at right angles to the usual position. By the feet of the adult was the body of an infant. There were no artifacts accompanying the burials."

Grave 32.—Adult male (USNM 325381), adult female (USNM 325382), and adolescent. Male buried at the bottom, 4½ feet deep; back of the head, two massive cylindrical shell beads and a potsherd. Female and adolescent lying side by side just above male; no artifacts reported. Grave carefully covered with logs of exceptionally large size, placed close together.

Grave 33.—Young child; depth 3 feet. No artifacts.

Grave 34.—Adolescent (USNM 325404). Back of the head, seven large white glass beads and a polishing pebble; in the soil above, a Unio shell and a potsherd.

Grave 35.—Adult male (USNM 325383); depth 3 feet. No artifacts.

Grave 36.—Adult female (USNM 325384). "No offerings in the usual way, but in the soil above the body were scattered numerous stone chips, a large broken flint implement, a horse (?) tooth, and several potsherds."

Grave 37.—Adult male (USNM 325385) and young child. A few potsherds scattered through the soil above the bodies.

Grave 38.—Two adult females (USNM 325386, 325387); one fully extended, face upward, at the bottom of a deep grave. By the head, some carved wooden sticks, probably gaming sticks, a broken bone spatulate tool, a *Unio* shell, a large bear claw, a large flint scraper, a rectangular piece of chalcedony, a copper strip about 3 inches long with copper bangles attached, a small polishing pebble, several potsherds, and a quantity of red paint in which some of these articles were embedded. "Just over the knees was a secondary burial of another adult female. The long bones were piled in a heap and the skull laid upon them."

Grave 39.—Young child; depth about 3 feet. By the head, 17 dentalium beads (USNM 325543), several copper beads, a very fine polished and engraved bone spatulate tool, and "some quill wrappings which had been preserved although the object about which they were placed had completely disappeared."

In August 1932, several additional graves were opened at Cemetery 2 by Dr. W. D. Strong (letter to Wedel, April 3, 1951). From the notes generously furnished me by Strong, it appears that these all contained the remains of children. Burial 1 included the skeletons of 3 children, with which were found two shell beads. Burial 2 was that of a child, at a depth between 2 and 3 feet; no artifacts are reported. Burial 3 was that of a child of perhaps 14 years; the skeleton was semiflexed and lay on its back, with the bent knees turned toward the right side. About a foot above the skeleton and 10 inches below the ground surface, was a layer of horizontal cedar poles. A few feet away, and at about the same level, was Burial 4, also that of a young child. Accompanying it were two shell beads, 145 "porcelain" beads, and three cylindrical copper beads. Under and around the bones of both these latter burials, Nos. 3 and 4, there was a thin brown layer that may have been decomposed skin or textile wrappings. Between the burials, at a depth of 28 inches, were several large potsherds described as "rounded portions of buff-colored thick cord-marked ware," and some broken bison bones, suggesting a food offering.

SITE 3 AND CEMETERY 3

Site 3, also known as Nordvold 1 (39CO31), is a cluster of earth lodge pits encircled by a defensive ditch that encloses an area some 400 by 500 feet in extent. It lies a few hundred yards northeast of the preceding Site 2, from which it is separated by the shallow upper course of the timbered ravine already mentioned.

The burial ground designated by Stirling as Cemetery 3 lies to the north of the ditch-encircled area, ". . . about a quarter of a mile to the north of [Cemetery] No. 2, on the crest of a high ridge overlooking the river. The graves were few in number and much scattered. The ground on this ridge is hard and contains a great many stones, which makes digging difficult. Probably because of this fact, the graves were generally more shallow than those of the other cemeteries worked. Stones seemed to have been used as markers and to help fill the graves, simply because there were plenty at hand.

"This cemetery undoubtedly belongs to the small village (No. 4) [an error, evidently; should read No. 3—WRW], and is of more recent date than No. 2."

Six graves were excavated in Cemetery 3. Each contained the remains of a single individual. They included two adult males, three adult females, and one child. In every instance, there were artifacts in association; but these were in no case abundant nor did they present much variety. Three graves yielded glass beads; none contained metal. No pottery vessels or sherds are recorded from the site.

So far as I have been able to determine, there is nothing in the artifact series or in the individual grave inventories to support the suggestion made in the field notes that this cemetery is more recent than No. 2. According to Strong (letter of February 13, 1951), however, the surface materials from the village are more closely related to those from Stirling's Site 4 (Leavenworth Site) and without doubt represent, as suggested in the field notes, a later horizon than that at Site 2.

The field data on individual graves at Cemetery 3 follow:

Grave 1.—Adult male (USNM 325334); covered with large stones; body lying on back, extended at full length; two large shell beads back of the head.

Grave 2.—Adult male (USNM 325335); bone hoe placed just above the skull; back of the head was a large bone spatulate tool, unpolished; in the left hand, a dozen or more small round white pebbles, two bears' teeth, a bear's claw, a cigar-shaped piece of wood, and skull of a prairie dog.

Grave 3.—Young child; depth 2 feet, body covered with large stones; back of the head were placed five large white glass beads, a cache of flint flakes, a bundle of grass wound with rushes (?), some petrified wood, and a quantity of red paint.

Grave 4.—Adult female (USNM 325336); back of the head were a number of small white glass beads, a bone arrow straightener with two holes, and a quantity of red paint.

Grave 5.—Adult female (USNM 325337); lower leg bones missing; back of the head, a few small white glass beads and a bone spatulate tool.

Grave 6.—Adult female (USNM 325338); body extended, head to east; by right hip were a flint knife, a piece of pumice, a piece of petrified wood, and a polishing pebble.

SITE 4 AND CEMETERY 4

Site 4, also known in the scanty literature as the Leavenworth, or Lewis and Clark, Site, is about 6 miles upriver from Sites 2 and 3 on the north (right) bank of the Missouri. Unlike the preceding three, all of which are on high uplands, this site is on a terrace perhaps 25 or 30 feet above the alluvial bottoms. It consists (Strong, 1940, p. 366) of two groups of closely spaced house sites, each group number-ing in the neighborhood of 60 or 70 lodge rings. The two groups, about 150 yards apart, are separated by Elk Creek, an inconsequential streamlet that shortly loses itself in the brushy bottoms immediately south of the site. Of the palisade that surrounded the village during its occupancy, no traces now remain.

The burial grounds worked by Stirling, as previously by W. H. Over in 1915 and 1917 (letter from Strong, April 3, 1951) and later by Strong in 1932, are situated on the bluffs about 300 yards north of the east part of the village site and immediately east of the Elk Creek valley. According to Stirling's field notes, it "lay along the crest of the bluff just back of the village. The methods of burial are similar to those found in Cemeteries 2 and 3. Articles found with the burials are much more abundant than in the others, and objects of European manufacture are relatively much more frequent.

"The soil in which the graves are dug is hard and gravelly, which makes digging rather difficult. However, the graves on the average are as deep as in Cemetery No. 2, where digging is quite easy in the sandy soil. Some graves were in a kind of muck which has aided in the preservation of a number of objects of wood and other perishable material."

Twenty-two graves were opened in Cemetery 4. Two contained the remains of 3 individuals each; 7, those of 2 individuals each; and 13, those of single burials. Among the 33 individuals represented, there were 8 infants, 2 children, 7 adolescents, 9 adult males, and 7 adult females. I offer no suggestion in explanation for the relatively large number of individuals other than adults—a proportion considerably higher than was found at the other three, probably earlier, cemeteries.

Even more striking than the disproportion in age groupings of the deceased here, is the much greater profusion and variety in mortuary accompaniments as compared to the other three cemeteries. According to the field notes, only one grave (No. 20) was without any artifacts. The others yielded, occasionally in some quantity, a variety of objects of chipped and ground stone, bone, horn, shell, leather, woven fabrics, wood, copper, iron, brass, white metal, glass, and porcupine-quill work. Of especial interest are a number of beads and pendants exemplifying native glass-working—specimens not duplicated in the materials from any of the other three cemeteries. A single pottery vessel is recorded from Grave 13, but this, regrettably, cannot be isolated in the collections as now cataloged. Also of much interest are the textile and leather garment fragments, which in a number of details compare nicely with the records left by Catlin, Bodmer, Maximilian, and others concerning early nineteenth century costume.

Grave 1.—Adult female (USNM 325339); depth 2½ feet. Back of the head and by the right hand were placed quantities of red, purple, green, and black paint. Also back of the head were the following: a rectangular glass mirror with wooden frame 2 inches by 4 inches (USNM 325467); a circular leather ornament 2 inches in diameter, perforated in the center and notched about the periphery like a circular saw (USNM 325474); a fossil belemnite; several [5] large blue glass beads and a great quantity of small blue and white glass beads; a silver finger ring; three flint arrowheads embedded in a mass of red paint; two small cone-shaped stones, one of gypsum, one of chalcedony, together with a curious pear-shaped piece of solid glazed porcelain (USNM 325534) of the same size; five *Olivella* shell beads; one long cylindrical shell bead 2 inches in length; the rounded bottom of a small cylindrical glass bottle of plain bluish-white glass (USNM 325468); two iron spikes with the imprint of textile wrapping on them; an iron scraper; a quantity of sunflower and wild-cherry seeds; a polishing stone; a cigar-shaped piece of wood 8 inches in length; two prairie dog skulls; a gun flint; 16 copper and 7 iron conical tubular beads; a quantity of funguslike material, probably tinder; a disk-shaped wooden object 2 inches in diameter, perforated in the center; a large knife of zinc (?) [white metal] which had been folded upon itself (USNM 325486); two large copper armbands 2 inches wide, of sheet copper; two pairs of copper bracelets; and a flat piece of wood 3 inches long by one-half inch wide, wrapped with porcupine quills.

Grave 2.—Adult male (USNM 325340); depth 2½ feet. Skull missing; where the skull should have been were: a quantity of red, white, and black paint and of pulverized micaceous schist; several shell beads; small blue glass beads; a piece of petrified wood; an iron spike (?); and a quantity of squash seeds. In the left hand was a bone whistle 8 inches in length (USNM 325507 ?).

Grave 3.—Adult male (USNM 325341); back of the head were a single perforated *Cypraea* shell, several shell and glass beads, a turtle shell, and a "small natural formation of chalcedony which simulated closely the shape and structure of a turtle shell"; by the left side "was what had probably been a buffalo-skin bag with the fur on the inside and which contained a silver [white metal] double cross of the Jesuit order."

Grave 4.—Young child; a few glass beads and some red paint.

Grave 5.—"Contained two burials, an infant and an adolescent (USNM 325410), the former lying above that of the latter. The infant had been wearing a headdress which was sufficiently well preserved by copper salts to reconstruct.

"It was evidently a leather hood with a band across the forehead ornamented with a row of brass buttons flanked on either side by a band of red, blue, and yellow quillwork, and beadwork of blue and white glass beads.

"Back of the head were placed an iron knife with wooden handle, an iron scraper, a piece of brass, a horseshoe, a copper bead, a ball of catlinite, a piece of petrified wood, and a copper bracelet.

"Back of the head of the adolescent were placed a mass of yellow paint and a shell bead. On the breast was a perforated elk tooth. By the side was the remains of a pouch ornamented with braided hair and containing a copper bell, an *Olivella* shell bead, and two flint arrowheads.

"The body had been wrapped in a buffalo-skin robe."

Grave 6.—Skeletons of two adult females (USNM 325342) overlying that of an adolescent, which had been wrapped in a buffalo robe. Adolescent accompanied by three large copper sleigh bells and four smaller bells; a bone whistle; 13 good-sized blue glass beads of native manufacture, 17 disks of blue or blue and white glass, and four triangular glass pendants—all of native manufacture; "the flat glass disks and pendants were ornaments upon a woven buffalo-hair bag [which] was decorated with braids of human and buffalo hair weaving"; there were also a great quantity of blue glass trade beads.

By the head of the second adult were: a piece of silver [white metal] wire about 4 inches in length; an oval copper breast ornament about 3 by 1½ inches; a perforated human tooth (USNM 325532); a quantity of blue glass beads; and one clear-cut glass bead about an inch in length.

Grave 7.—Adolescent (USNM 325343); under the head were a large round blue glass bead and a disk-shaped bead of catlinite (USNM 325536); "about the neck was a necklace of large oval glass beads of native manufacture, each about an inch in length; seven were of blue glass, six of white" (USNM 325459, see also p. 151).

Grave 8.—Adolescent (USNM 325344); head to east, feet to west; red paint at the head and feet. Back of the head were: the bones of a small animal; two porcelain disks of white glazed chinaware; an iron knife; a bear's claw; a quantity of micaceous shale; a broken glass mirror; and a quantity of small blue glass beads. Across the abdomen lay a complete buffalo rib. By the left side lay a cigar-shaped wooden object about 10 inches long, and a "wooden club of Salish type," 30 inches in length (USNM 325592).

Grave 9.—Adolescent male (USNM 325346); depth 3½ feet; above, was secondary burial of adult male (USNM 325345), from which the lower mandible and about half the bones were missing. With the lower burial were a steel strike-a-light (USNM 325521), a flint scraper, a white stone bead, and a piece of petrified wood.

Grave 10.—Adult male (USNM 325419), immediately above which was an infant skeleton. Back of the head of the adult were: a large *Unio;* a steel razor (USNM 325479); two flint scrapers; two gunflints; a lump of white paint; a glass bottle with inscription (USNM 325462); an iron spike; an iron arrowhead; two copper beads; a ball of blue slate; a broken flint knife; and a braided hair headdress.

Grave 11.—Infant, with head resting "on a pouch of blue flannel decorated with green and white porcupine quills and brass buttons. On the head had been a hood with many small glass beads. By the side was a bundle of small sticks, probably gaming sticks."

Grave 12.—Adult female (USNM 325347), with infant by head. "The head of the adult was directed west, the feet east"; by the head were: red, green, and white paint; a lump of potter's clay; two large *Unio* shells, one filled with red paint; two iron scrapers; 10 *Olivella* shell beads; a bear's claw; two wooden cigar-shaped objects; a flint chip; three copper bells; a quantity of sunflower seeds. In the left hand was a natural sandstone concretion shaped like an ear of corn (USNM 325584).

Grave 13.—Adult male (USNM 325348), head west, feet east. Accompanying artifacts included: an inverted pottery bowl; an inverted wooden bowl; a wooden spoon; white paint, and a very large quantity of red paint; micaceous schist; five blue glass beads of native manufacture; a large quantity of small blue and white beads; two paint brushes (USNM 325509) made of bison bone; a decorated antler flaking tool; a piece of silver [white metal ?] wire; a disk-shaped polishing stone; an iron blade and another unknown object of iron, oval in shape; two *Unio* shells; a turtle shell; perforated bear's claw; six unperforated claws; a large perforated bear's tooth; two cigar-shaped wooden objects; a rectangular piece of wood about 6 inches by one inch, perforated at each end; a crane's skull; two armlets each made of four coils of very heavy copper wire (USNM 325496); a number of copper and iron beads; a ball of catlinite; two smaller stone balls; two double-barred silver [white metal] crosses; a crescent-shaped breast ornament of silver [white metal]; and a quantity of squash seeds. "The copper armlets and the silver crosses were in a fur pouch by the side, the silver breast ornament was on the breast. The remainder of the articles were placed back of the head."

Grave 14.—Adolescent (USNM 325401). Back of the head were: three copper strips which may have been used as knife blades; an iron blade hafted in a bone handle (USNM 325511); and a quantity of red and yellow paint in a leather pouch.

Grave 15.—Adolescent male (USNM 325403). About the neck was a necklace of bear [eagle] claws (USNM 325552); by the head were: five large and three small copper beads; two silver [white metal] buttons; one large brass button; a silver [white metal] nose ornament;

two iron beads; two triangular blue glass pendants of native manufacture; a quantity of white oval beads; a quantity of blue glass beads; two long cylindrical shell beads [hair pipes?]; a paint pouch which had been fastened with a silver button and contained red paint, a piece of petrified wood, a flint arrowhead, and a flint knife.

Grave 16.—Adult male (USNM 325350), depth 4 feet. By the feet was a quantity of red paint. By the head were: red and white paint, a catlinite pipe, a flint knife, a flint arrowhead, a number of large glass beads, a piece of pumice, a potsherd, an iron blade, a stone polishing tool, a gunflint, a bone arrow-straightener with two holes, an antler flaking tool, an *Olivella* shell bead, a bear's claw, a copper knife, a fragment of male human parietal, a catlinite ball, two horse teeth, an eagle skull, a quantity of tobacco, a sandstone shaft smoother, four gaming bones for cup and ball game (USNM 325557); by the side were two arrows with iron points and a wooden spoon; in the dirt over the body were a broken bone hoe and the complete scapula of an elk.

Grave 17.—Adult female (USNM 325351). By the head were: a flat polished disk-shaped stone, an antler awl, a bone whistle, a quantity of red paint, and four bone paint brushes (USNM 325509).

Grave 18.—Adolescent (USNM 325407), wrapped in a fur robe and "wearing a leather shirt profusely ornamented with copper bangles and long copper tubes. As a result of this, most of the shirt was preserved . . . ." By the head were: "three large glass beads of native manufacture, two black and one white"; a mass of small blue glass beads and a number of larger glass trade beads; a flat piece of worked bone with a circular hole in it (USNM 325505); an iron awl with an antler handle (USNM 325514?); a large quantity of red and white paint; a bracelet made of four beads, "each made from a closely wound coil of copper wire" (USNM 325498); a disk-shaped piece of polished red stone; a white stone ball; a potsherd; a "rectangular piece of wood 10 inches long by 1 inch in width, concave on one surface and ornamented with closely drawn cross-hatched lines" (see USNM 325574). Just above the chest was the body of an infant.

Grave 19.—Adult female (USNM 325352). By the head were: a pair of moccasins ornamented with quillwork and stuffed with grass; two heavy copper bracelets; a blue glass disk of native manufacture, somewhat resembling turquoise; and "a curious bone spatulate tool, forked at one end and notched along the edges" (USNM 325510). Just above lay the body of an infant.

Grave 20.—Adolescent (USNM 325405), above which lay two infants side by side. No artifacts.

Grave 21.—Adult male (USNM 325353), with child above; by the head of former were two silver earrings (USNM 325487) and traces of red paint; by the left side was a rectangular piece of mica about 2 inches wide by 3 inches long, and a round white pebble; by the head of the child were a few small blue glass beads.

Grave 22.—Adult female (USNM 325354). In a fur pouch back of the head were two bracelets of wound copper wire and "six large glass beads of native manufacture, four white and two black"; a very large quantity of small blue glass beads were all about the body from head to foot; by the side a "wing-shaped brass hinge mounted on a stick and ornamented with feathers and tufts of hair;" by the feet a quantity of red paint.

Several additional graves were opened at Cemetery 4 in August, 1932, by Dr. W. D. Strong (letter to Wedel, April 3, 1951). The notes Strong has kindly sent me show that three graves were investigated at this time. Burial 1 had been smashed by the building of a road, and there are no other details concerning its nature. Burial 2 was that of an adult, apparently semiflexed and lying on the back, with head to the east. The bones lay at a depth of 2 feet, apparently on top of two parallel horizontal poles or logs. Between the ribs were the remains of an infant, with which was a bird beak. The right arm of the adult was partially preserved by copper bracelets. Artifacts in the grave included: 12 iron dangles, four coiled copper bracelets, one small copper coil, one coiled lead ring, one copper dangler, a long tubular copper bead, "3 long tubular (imitation [glass?]) shell beads" [=hair pipes], copper cloth braid, one copper button, five large blue glass beads and numerous small ones, and two split feathers wrapped with sinew. Burial 3, 2 feet deep, was that of an infant in poor condition, accompanied by some small blue glass beads. All the artifacts here reported parallel closely Stirling's earlier collections.

THE ARTIFACTS

POTTERY

The Stirling collection from the Mobridge area includes a relatively limited sample of the ceramic remains from the sites investigated. There are three whole pottery vessels, all of small size; two larger vessels reconstructed in the Museum laboratory from potsherds whose exact provenience is uncertain; and about 250 potsherds. Unfortunately, the exact origin of all these specimens as to site, and as to specific features within identified sites, is not clear. Two of the small vessels are without doubt from Cemetery 2, Grave 3; and the third is probably the "inverted pottery bowl" recorded in the field notes as from Cemetery 4, Grave 13. All bear the permanent Museum No. 325446. The two reconstructed specimens are attributed only to the "vicinity of Mobridge, South Dakota." The potsherds are in six lots from as many sites, all of them apparently village locations; and four of the lots are, inferentially, from village sites regarded by the collector as associated with one or another of the four nearby cemeteries at which most of the excavating was done. The sherds found, according to the field notes, in several graves in Cemeteries 1, 2, and 4 cannot now be isolated, if, indeed, they were incorporated in the collections that finally reached the Museum.

Sherd collections.—For whatever light they may throw on the problem of interpreting the more extensive burial site collections hereinafter described, I include here a brief statement of the salient characteristics of the village site ceramic materials at hand. Descriptive data only are offered; I make no attempt to set up sherd types or wares, for which much larger samples would be desirable and are undoubtedly available in other institutions. It is worth noting at this point, I think, that the chronological leads afforded by the burial site materials generally seem to be reflected, or at least are hinted at, also in the village site sherd samples here discussed.

The potsherds are rather variable in color, ranging from buff and tan through brown to various shades of gray. Tempering material in all cases appears to be crushed granite, so that various amounts of feldspar, quartz, and mica are nearly always visible. The heavier, coarser sherds are often thickly tempered with particles that may be as much as 3 to 5 mm. in maximum dimension; in the thinner pieces, the inclusions are 1 mm. or less in size. Freshly broken edges have a granular appearance, varying somewhat with the quantity and coarseness of the aplastic. Hardness of exterior surfaces ranges in the neighborhood of 3 or 4.

Common to all four sites with which we are here primarily concerned [8] are thick, rough sherds that suggest large utility jars. Vessel shapes are indeterminable. Medium to high necks with slightly everted rims seem to be characteristic; the lip is thickened slightly or not at all, and commonly is scalloped by pressure between thumb and finger. The exterior surface of the neck is usually coarsely striated or grass-wiped, the striations being vertical or nearly so; and a number of sherds show similar marks running horizontally around the inside of the neck.

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[8] Included here are the following lots of material, with Museum numbers and the site designations as shown on the permanent catalog record: 325448, 15 sherds from "Near mouth of Grand R., —Site No. 2"; 325449, 90 sherds from "Village Site No. 1"; 325450, 11 sherds from "Mouth of Elk Creek"; 325452, 19 sherds from "Village Site No. 4." Not included are: 325447, 95 sherds from "Bamburgh Place—Site No. 7"; and 325451, 18 sherds from "Village Site No. 5."

I am somewhat puzzled by the presence of the two small lots listed as from "Mouth of Elk Creek" and "Village Site No. 4." Village Site No. 4 is undoubtedly the so-called Leavenworth Site (39CO9), which is located at the mouth of Elk Creek (see map, fig. 10). From this, it would seem that the two lots perhaps originated from one and the same site; but if this is so, I am unable to explain why there should have been any segregation of the two samples. Regrettably, there are no sherds credited to Site No. 3, which raises the question whether one of the two lots just mentioned (for example, that said to be from Site No. 4) is actually from Site No. 3.

Since preparation of the pottery notes presented herein, and transmittal of the manuscript for publication in May 1951, all of Stirling's Mobridge sherd samples have been turned over on loan to the Department of Anthropology, Columbia University. There Paul Tolstoy has analyzed them and correlated them with pottery types established by himself and Jack T. Hughes on the basis of Columbia's much larger pottery collections from the Mobridge locality. The Tolstoy-Hughes classification, scheduled for distribution in 1951 but unwittingly delayed by myself, will presumably be made public at some future time.

Among the grass-wiped rimsherds from Site 1, the lip is usually left undecorated except for the scalloping. Often, however, it is flanged in such a manner as to leave a sort of narrow gutter on the upper or upper outer surface. One or two have a slightly thickened lip whose exterior surface bears broad shallow oblique incisions (or nearly obliterated cord impressions?). The single specimen from Site 2 has a scalloped lip. At Site 4 and the "Mouth of Elk Creek," what seems to be the same or a very similar ware has a slightly thickened, often beveled, lip bearing short diagonal cord impressions. About half the sherds we have from Site 4 are of this heavy ware; and the entire series from the site closely parallels the sherds figured by Strong (1940, pl. 7) from the Leavenworth Site.

Of much better quality are sherds with incised decoration or fine cord impressions or both, applied to the neck, rim, and/or upperbody. These occur only in the series from Sites 1 and 2. With few exceptions, these techniques are found only on a much thinner, better-made ware than that carrying the grass wiping; most of the sherds are from 3.5 to 5 mm. thick and have been smoothed. Commonly, the neck bears 5 to 10 parallel horizontal lines of single cord impressions or incising, the latter sometimes with short diagonal punctations along the upper edge just below the rim. The body decoration consists of various combinations of parallel incised lines, usually placed in blocks in which the lines slant in different directions from one block to the next. Among the few rimsherds present, there are some S-shaped examples; but simple out-curved forms with rounded plain or diagonally incised lip seem somewhat more common.

In most particulars, the fine-cord impressed sherds closely resemble the incised specimens; and there is ample evidence that cord impressing and fine-line incising were often used on the same vessels (see, for example, pl. 55, *a*; 56, *a*, *b*). So far as our sample shows, cord impressing was used only on neck and rim, whereas incising may be found on neck, rim, and upperbody. Several cord-impressed rims and neck sherds unquestionably had incised body decoration as well. There are a few S-shaped rims among the cord-impressed sherds; and at both sites (No. 1 and No. 2) these include some which have both horizontal impressions and the "rainbow" motif. Rather more common is the narrow everted or beveled lip, apparently above a cord-impressed neck, and decorated with corded lines or occasionally diagonal cord impressions. Loop handles are more common in the corded series than among the incised sherds; they are characteristically widest at the top, where they merge into the outer edge of the lip, and bear horizontal cord-impressed lines. Neither the fine cord nor the fine line incising techniques appear on any of the sherds from Site 4 or from the "Mouth of Elk Creek."

There are only a few body sherds in the present collection. They include simple stamped pieces from Sites 1 and 4; I suspect their absence from Site 2 may be an accident of collecting. There are also a few reddish sherds from both sites. Here it becomes particularly clear, I think, that our samples are heavily weighted in favor of decorated sherds, and cannot be regarded as truly representative of the ceramic remains that occur on the sites involved.

On the basis of surface treatment, the sherds at hand from certain specified sites in the Mobridge area may be grouped as shown in table 1.

TABLE 1.—*Summary of data on sherd treatment at certain sites near Mobridge, S. Dak.*

Sherd treatment	Mouth of Elk Creek	Site No. 4	Site No. 2	Site No. 1	Bamburgh Place	Site No. 5
Grass-wiped	5	9	1	22	18	
Fine-line incised			5	21	37	4
Fine-cord impressed		1	7	21	12	5
Fine-cord and incised			1	2	4	
Cord-wrapped stick					1	
Simple stamped		8		11	7	
Plain		1		5	7	
Other	6		1	5	4	9
Total	11	19	15	87	90	18

Despite the inadequacy of our samples, certain points of interest emerge. For one thing, the sherds from Site 4 and "Mouth of Elk Creek" are, on the whole, representative of a much simpler pottery tradition than is manifested by the specimens from Sites 1 and 2. They show much less variation in regard to decorative treatment, less technological ability, and impress me as without much question the products of a decadent ceramic art. These materials, moreover, come from a site that can be pretty closely dated as an Arikara occupancy of circa 1803–32. Sites 1 and 2, on the other hand, show a free and competent use of several decorative techniques and a variety of design motifs. Significantly, too, they are earlier in time than the preceding, since neither can be identified with a village visited by white traders even though our evidence indicates that both were inhabited up to a time when trade goods were reaching the vicinity. The materials from both differ appreciably from what is usually thought of as historic Arikara. Strong (1940, p. 380) has already noted some relationship between our Site 1 and the important stratified Rygh site (39CA4; see map, fig. 10) a few miles upstream; and it would appear that Site 2, ceramically at least, is closer to Site 1 than it is to Site 4 or to "Mouth of Elk Creek."

Pottery vessels, whole and restored.—Vessel A (USNM 325444) is a small roughly fashioned oblong bowl, possibly warped or otherwise compressed laterally before firing (pl. 55, *c*). It has a rounded base, hemispheric body, slight shoulder, constricted neck, and an everted rim with plain rounded lip. The unsmoothed exterior shows surface cracks, scratches, and other imperfections; and the interior is likewise rough and uneven. Surface color varies from buff to almost black. On the neck there are nearly obliterated traces of some sort of surface roughening or ridging, as with a cord-wrapped (?) or scored simple stamping tool. The piece has a maximum length of 11.5 cm., lip to lip, or of 10 cm. across the body; a width of 8.5 cm.; and a height of 7.5 cm. It is rather sparingly sand-tempered.

Vessel B (USNM 325444) is a small deep bowl with round base, vertical sides, very slightly everted rim, and thickened lip (pl. 55, *b*). It shows little evidence of care in finishing, and the surfaces are rough and pitted. Color varies from light buff to dark brown. The body bears simple stamping, with the ridges and hollows running *horizontally*. On the rim there are short diagonal incisions or single cord impressions on interior and exterior surfaces, but these two series do not quite touch at the lip. The lip is drawn out slightly to form two oppositely placed tabs. Maximum body diameter is 9 cm.; maximum height is 7 cm. Tempering appears to be sand.

Vessel C (USNM 325444) is a small jar with hemispheric body, rounded shoulder, constricted neck, and a thickened slightly everted rim (pl. 55, *a*). As in the other two small pieces, the surface color is blotchy and uneven, varying from light buff to nearly black. The paste is gray, with sand tempering. Decoration is by single-cord impressions and incising. Three parallel lines of single-cord impressions encircle the neck. Immediately above is a band of short diagonal, closely spaced, single-cord impressions; below, in oppositely slanted blocks, is closely spaced incising. The thickened and rounded lip has three lines of cord impressions, flanked on the inner upper rim surface by short diagonals similarly produced. Two oppositely placed strap handles connect lip and neck, joining the latter at the horizontally corded zone. The handles narrow toward their lower attachment, and are decorated with horizontal single-cord impressions. Maximum body diameter is 10.8 cm.; the orifice exterior, lip to lip, is 7.9 cm.; and height is 8.8 cm.

Vessel D (USNM 325445) has been reconstructed (pl. 56, *a*) from a sherd including a rim section and handle to the shoulder, but none of the base. The body is globular and slightly flattened; the neck is constricted, the rim slightly outcurved, and the lip unthickened. On the shoulder and lower neck there is an encircling band of incised decoration about 5 cm. wide. This consists of quadrilateral kite-shaped areas set end to end and filled with nested vertical chevrons. The angles between adjacent units are filled with blocks of incised lines slanting downward to the right in the upper angles, and downward to the left in the lower angles. The lip has single-cord impressions which continue as short horizontal lines down the tapering strap handles, of which there are two in the restoration. The paste is dark brown, with grit tempering. As reconstructed, the vessel has a body diameter of 16.5 cm., orifice diameter (exterior) of 12.8 cm., and a height of 13 cm.

Vessel E (USNM 325446) is reconstructed (pl. 56, *b*) from a sherd much like that on which the preceding piece is based. It has a hemispheric underbody, rounded shoulder, flattened upperbody, constricted neck, everted rim, thickened lip, and two oppositely placed strap handles. On the inner lip is a row of shallow circular pits averaging 2 to 3 per cm.; the outer lip has two or three single-cord impressions encircling the vessel, and these are paralleled by short horizontal lines down the handle. The neck is encircled by two horizontal lines of single-cord impressions, which are interrupted by the base of the handles. Just below, on the flattish upperbody, are short radial incisions which continue down over the shoulder and finally fade out. On the shoulder is a row of pits or rounded punctations somewhat larger than those on the lip and averaging about the same in spacing. The sherd has a gray paste, with grit tempering. The vessel measures 16.9 cm. in maximum diameter, 13.2 cm. from rim exterior to rim exterior, and 11.5 cm. in height.

As already indicated, there is uncertainty regarding the exact provenience of the whole and reconstructed vessels just described. For some of the specimens, however, tentative suggestions can be ventured. Thus, Vessel C is perhaps one of the two reported from Grave 3, Cemetery 2; it carries decoration in cord impressing and incising, techniques which are represented in our village site sherd samples only from Sites 1 and 2. The other specimen from this grave is either Vessel A or Vessel B; but so far as I can see, there is now no way of determining which of these is from Cemetery 2 and which came from Grave 13, Cemetery 4.

The two reconstructed vessels are probably, though not certainly, based on sherds from the village site series. Since both bear cord impressions and incising in a style not represented in our Site 4 materials, I suspect that these vessels, too, should be attributed to Site 1 or Site 2.

OBJECTS OF CHIPPED STONE

Arrowpoints.—There are two lots of arrowpoints in the Mobridge collection. The larger (USNM 325562) includes about 75 whole and fragmentary specimens found, according to the catalog, "On surface, various village sites." Seven other points (USNM 325560) are "From graves"; the field records mention eight specimens from this latter source.

The village site specimens (pl. 57, *a*) are uniformly small and well made, with a basically triangular outline. About half are provided with a single pair of lateral notches, placed usually just above the base; the rest are unnotched. With few exceptions, the retouching is bifacial, producing a point that has a thin biconvex cross section. Complete points range in length from 17 to 28 mm.; in width, from 14 to 22 mm.; and in thickness from 1.5 to 3 mm. The materials of which they are made include chalcedony, chert, agate, and fine-grained quartzite.

The seven specimens recorded as "From graves" are larger (pl. 57, *b*) and less skillfully fashioned than the preceding. Two are thick and subtriangular, without notches; the rest, including some damaged pieces, seem to be mainly corner- or side-notched. With one exception, all exceed in size the largest village site points. They are made of drab stone, such as chert and quartzite, which contributes further to the unfavorable contrast they make with the village site specimens.

Scrapers.—The commonest form of scraper here, as at most other excavated Plains sites, is the "thumb-nail" or "duckbill" end scraper. It is more or less triangular or oblong in outline and planoconvex in profile; retouching is usually confined to the convex or keeled side. There is a good deal of variation in details, but in view of the lack of precise provenience data I doubt that a detailed form analysis would be very rewarding. There are about 160 of these scrapers in the present collection, varying in length from 1.5 to 4 cm.; width usually approximates 60 percent of the length. The materials used parallel rather closely those exhibited in the projectile point series—chalcedony, chert, jasper, agate, etc.

There are a few larger oblong, squarish, and other specimens that resist easy classification. Some are planoconvex, with one steeply chipped end that is reminiscent of the foregoing end scrapers. All have retouched edges and could have been used as scrapers, knives, or for similar purposes.

The field records indicate that scrapers accompanied two burials in Cemetery 2 and two in Cemetery 4; but there is no way of identifying the specimens so found.

Knives and blades.—Abundantly represented is a cutting implement fashioned from plates of whitish waxlike chalcedony. There are 31 worked fragments (USNM 325564) of this material (pl. 57, *e*). They vary in size; none exceeds 8 cm. in length, 4 cm. in width, and 8 mm. in thickness. The latter dimension depends in each case upon the thickness of the plate from which a given artifact was fashioned, since this material occurs naturally in the Badlands in thin seams sandwiched between layers of calcareous material. One edge of each fragment shows thinning and retouching; occasionally, the opposite edge is blunted or worn smooth to protect the user's hand.

Artifacts of this general type have a wide distribution throughout the western plains. Closely similar specimens made of the same material have been found at preceramic sites near the Black Hills, and their antiquity would seem to be measurable in terms of millennia. Hughes (1949, p. 270) has suggested the term "Badlands knife" for this type.

Another large lot of chipped specimens (USNM 325561) includes several complete blades and numerous fragments. Forms indicated (pl. 57, *c*, *d*, *f–i*) vary from a thin narrow prismatic flake, 50 mm. long, with both edges retouched, to lanceolate and other large specimens with retouched and occasionally beveled edges. These range in length up to 9 cm. and in width up to 3.5 cm. There are several examples of a narrow chalcedony blade with allover chipping. These range up to 7.5 cm. in length, with an average width of 1.4 to 2 cm., and a thickness between 5 and 6 mm.; they are biconvex in cross section, with thin rounded ends, and are quite distinct from the Badlands knife in all particulars except the material of which they were fashioned.

Large chipped forms.—There are four of these objects (USNM 325567). They are oblong to subtriangular in outline, coarsely chipped, with a thick heavy cross section. The edges show little evidence of use, and have been retouched only slightly, if at all. In size, they range from 6.7 by 3.6 cm. up to 9 by 6.5 cm. Presumably they represent blanks, or they may have been little-used choppers or hide scrapers.

OBJECTS OF GROUND STONE

Mauls and hammers.—Here I have included a small series of ground and pecked implements made of hard fine-grained stone, such as quartzite, sandstone, and diorite. Most of them are not very well shaped or finished, and they were presumably intended for utilitarian uses primarily. The field notes do not indicate that any such pieces were found in the burial grounds, and I suppose that all those here noted can therefore be presumed to have come from village site investigations.

There are only three specimens that can be considered complete and unbroken. One is more or less barrel-shaped, with circular cross section and somewhat battered ends. Although symmetrically shaped, it has no groove. It measures 6 by 4.8 cm. It is small enough to have been used as a hammerstone, without haft, and therefore should perhaps not be classed as a hammer. Another specimen, of crumbly granite, is beehive-shaped and measures 8 cm. across the flat pounding surface by 6 cm. in height. It suggests the asymmetrical club heads that were frequently set in a leather binding or pocketlike sheath at the end of a handle; there is no groove. A third specimen, illustrated in plate 59, *e*, consists of an elongate quartzite pebble, irregularly circular in cross section, with rounded ends that show very little abrasion. A shallow pecked groove encircles the middle. The specimen measures 11 by 5.5 cm.; hafted at the groove, it would have made an excellent weapon of the historic "war-club" type. The head resembles rather closely a number of club heads in the ethnological collections of the National Museum.

Two other larger pieces, cataloged as axes (USNM 325568), are of diorite and sandstone, and are partly or wholly grooved. In their present form and condition they do suggest axes or cutting tools; but they look to me very much like typical large mauls that have been split—in one case, lengthwise, in the other diagonally through one poll, and then were discarded. They measure up to 17 cm. long, and from 10 to 12 cm. in maximum diameter, which would put them easily within the range of sizes reached by such implements elsewhere in the Plains area.

Pestle (?).—This is an elongate quartzite pebble, of rather irregular form, with battered ends. It measures 13.5 by 5.5 cm. Cataloged as a "muller," it shows no evidence of the wear one would expect to find on a muller; and the battered ends suggest its use as a pestle or hammerstone.

Polishing stone.—This is a whitish quartzite pebble, circular in outline and showing an asymmetrically biconvex cross section. The less convex face is worn very smooth, and is much lighter in color than the other face. Its size, 85–90 mm. in diameter and 40 mm. in thickness, is such that it could have been conveniently grasped in the hand and used as a rubbing or polishing tool.

Grooved ax.—This is a crudely shaped asymmetrical object made of gray fine-grained stone, apparently a basalt. One side is deeply notched, and a shallow groove extends across one face to the opposite edge, which has a very shallow notch. The ends are spalled and broken. There is no sign of smoothing, the piece evidently having been fashioned from a spall of convenient size. It measures 13.5 by 9 by 2.5 cm.; one face is more or less flat, except for considerable spalling on the edges.

Abrading stones.—These include two small sandstone specimens, one of them fragmentary, that suggest the paired shaft-smoothers used by historic Plains tribes; and a group of five larger irregularly shaped abraders evidently used on larger surfaces. Of the first two specimens, the complete one is 8 by 3.3 by 1.3 cm., roughly rectangular in form, and has a groove on each of two sides. These grooves, however, are variable in size and depth, and could not have been produced by the usual method of using the paired smoothers. What is suggested here is perhaps an awl sharpener or an implement for dressing down the ends of sticks or other objects.

The larger pieces have smoothing facets of irregular size and shape, as if they had been used on large surfaces of soft materials, for example, hides or perhaps wooden vessels, etc.

"Whetstones".—Here are included two well-made ground-stone objects (USNM 325588) whose real use remains unknown. Both are made from fine-grained quartzite or sandstone, have a nearly rectangular cross section, and taper slightly toward each end. In the longer piece, the taper is in one plane only, so that the extremities are bluntly chisellike; in the other, it is in two planes so that the ends are rounded as well as flattened. In every case, the ends show signs of wear, as though they had served as pecking stones or light hammers. The longer measures 15.5 by 2.1 by 2 cm.; the other is 10 by 2.8 by 1.8 cm.

There is an interesting resemblance between these two objects (pl. 59, *c*, *d*) and a mounted specimen (USNM 200543) labeled "Medicine wand club" from the Shoshoni, now in the U. S. National Museum collections. Unfortunately, it is impossible to determine whether these latter specimens are grooved or not without taking them apart and perhaps damaging the bindings. None of the unmounted ethnological club heads resemble the two pieces from the Mobridge sites.

Archeologically, similar pieces have been reported from the Hill Site, an early nineteenth-century Republican Pawnee village on the Republican River in southern Nebraska (Wedel, 1936, p. 79 and pl. 7, *a–g*). These are all grave finds, occurring singly near the left hand of adult male burials. There, too, their purpose is unknown.

Catlinite objects.—Artifacts of this material occurred in graves in Cemeteries 2 and 4, and apparently in the village sites as well. They were not abundant, however, and it would appear that the stone was employed to a very limited extent only. Some of the pieces certainly are from the widely celebrated pipestone quarries in southwestern Minnesota, some 250 miles distant in an air line; and it is quite likely that all were imported from that locality.

The most interesting and best-made pieces, possibly excepting a pipe, were three decorated objects, purpose unknown, from Cemetery 2. The first (USNM 325526) is approximately circular (pl. 58, *c*), its diameter varying between 49 and 52 mm. and its thickness averaging 4 mm. From a 3-mm. central biconic perforation, four lines of five small pricked dots radiate outward to quarter one surface. On the other face, two incised lines intersect at the perforation, and two of the triangular areas so delimited are filled with parallel incised lines which, if they were extended sufficiently, would form chords. A radial line from center to edge divides one of the remaining undecorated areas. The edges are plain, and the surface is generally well smoothed. It was found in a child burial, Grave 3, Cemetery 2.

From the same burial, there is a flat subrectangular piece (USNM 325527) with rounded corners and slightly concave sides which give it more or less the appearance of an hourglass in profile (pl. 58, *b*). Lightly incised lines occur on both faces, running more or less parallel to the short axis of the specimen. Half of one surface carries five pairs of lines; below the constriction, these continue as 7 or 8 incomplete single lines. On the other surface, there are only two or three haphazard lines or scratches. The piece measures 55 by 27 by 5 mm.

A third specimen (USNM 325528) from an infant burial in Grave 7, Cemetery 2, somewhat resembles the foregoing in outline (pl. 58, *a*). The corners are rounded, and three edges are slightly concave; the fourth is straight. A deep narrow incised groove runs along each edge, but these do not continue around the corners, each of which is pierced with a tiny hole. One surface is plain and well smoothed; the other is rather elaborately decorated with incising (pl. 58, *a*). Two diagonals, each running from corner perforation to corner perforation, divide the surface into four roughly triangular areas. The triangular spaces above and below the point of intersection are filled with 14 and 17 closely spaced incised lines, roughly paralleling the short sides of the piece. The wide shallow triangles on either side of this hourglass design have each an incised zigzag line that curves to conform to the concave edge of the object. It measures 55 by 36 by 5 mm.

From the burial of an adolescent in Grave 7, Cemetery 4, came a small plain flat disk (USNM 325536), approximately 20 by 4 mm. in size, with a 4-mm. biconic central perforation (pl. 58, *d*). Perhaps intended to be a bead, the specimen shows little evidence of use and still carries some of the marks of the shaping process.

Three catlinite spheroids (pl. 58, *e*, *f*), found in as many graves in

Cemetery 4 (Graves 5, 13, and 16), are part of a larger lot of similar stone objects cataloged together under USNM 325523. All are slightly compressed and tend to be somewhat imperfect in form. Their diameters approximate 37–39, 30–33, and 26–27 mm. They bear no markings or decoration of any kind.

Other than the foregoing, the only worked catlinite in the present collection are the pipes, which are discussed elsewhere in this section of the report.

Pipes.—These are not plentiful in the collection. There is one nearly complete specimen; another includes the angle between stem and bowl; the rest are fragments that cannot be satisfactorily grouped as to form. With a single exception, they are apparently of catlinite. All bear the same catalog number (USNM 325535), and their individual provenience is indeterminable.

The most nearly complete pipe is a small L-shaped affair, with a very slight projection of the stem beyond the front of the bowl (pl. 58, *g*). There are traces of a slight flange bordering the stem hole, as if that end had never been finished off or else was shortened after completion of the pipe. At its stem end, the diameter is 1.6 cm.; the bowl enlarges slightly to a maximum diameter at the lip of about 2 cm. In over-all dimensions, the piece measures 28 mm. long by 35 mm. high. The boring is biconical. I am inclined to believe that this specimen is the "small, plain, angular bowl of catlinite, about an inch in length," recorded in the field notes as from Grave 16, Cemetery 4, that of an adult male; but there is no sure proof of this identification.

The second specimen, broken at both stem and bowl extremities, apparently was similar to the foregoing in size and form. Instead of the round-pointed projection beyond the bowl base, however, this has a well-rounded knob on which eyes are indicated by two small pits below which is an incision representing a mouth. An upward-curving line on each side sets off this crude, almost insectlike, face.

Seven other catlinite fragments are evidently from bowls or stems of small pipes, whose size and form, if different from the foregoing, must remain conjectural. These, like the piece just described, are presumably from village-site excavations or else are surface-collected.

The single pipe fragment of material other than catlinite is a conical piece, 55 mm. long, fashioned from gray limestone. At its large end, it is 25 mm. in diameter, with a bowl cavity of 11 mm. The smaller end, 17 mm. in diameter, is broken, and gives no evidence of an intersecting stem bore. There is no decoration.

Spheroids.—In addition to the three catlinite specimens already described, there are four others, apparently of quartzite or other hard fine-grained stone (USNM 325523). They are somewhat inferior in shaping and finish to those of catlinite; but like them, come from burials. The largest is 48 by 37 mm., whence they range downward in maximum diameter to 26 mm. (pl. 58, *i*, *j*).

According to the field notes, stone balls not of catlinite were found as follows: Two with an adult male in Grave 2, Cemetery 1; two with a male in Grave 13, Cemetery 4; and one with an adolescent in Grave 18, Cemetery 4. Of these, only the four noted above have come to light in the collection at hand.

Gypsum beads.—From a male burial, Grave 26, Cemetery 2, came two massive objects of gypsum (USNM 325548). They are oblong or subrectangular in outline, compressed laterally in one plane, and tapered toward each flattened end (pl. 63, *j*). The larger, 52 by 17 by 10 mm., is bored from each end; but the two holes do not quite reach each other at the center. The other, 50 by 15 by 9 mm., is undrilled. Both are heavy and solid, with partially smoothed surfaces.

Of uncertain provenience, but quite likely from burials, are three other specimens. Two are shaped somewhat like the foregoing, with flattening in one plane, and squared ends (pl. 63, *h*). The larger, 33 by 18 by 15 mm., has a 4-mm. bore lengthwise; the other is broken, but was evidently of similar size and proportions. They are strongly reminiscent of the massive barrel-shaped shell beads described in another section, of which they may be locally made imitations.

The remaining object in this group is a smaller bead, of an elongate barrel shape, measuring 26 by 10 by 8 mm., with a 3.5-mm. cylindrical bore. This, like the two preceding, is much weathered, and has a chalky look and feel.

OBJECTS OF UNWORKED STONE; PIGMENTS

Miscellaneous pebbles.—There are several lots of small to medium-sized pebbles, most of which exhibit a minimum of modification or none at all. They are generally well-smoothed, doubtless as a result of stream action, and many of them were presumably used without any modification as polishing and smoothing stones. Others show some evidence of battering, and could as well be classed as pecking stones or small hammerstones. Many of them doubtless came from burials; the field records show that small round pebbles or "disc-shaped polishing stones" occurred, usually singly, in four graves at Cemetery 2, two graves in Cemetery 3, and five graves in Cemetery 4. In no case, is the individual provenience preserved; all specimens are cataloged under one or another of three permanent numbers (USNM 325524, 325537, and 325586).

The first of these lots includes 15 small pebbles, 12 of which have a maximum diameter of less than 10 mm. and range down to 3 mm.; all, according to the catalog, were "Found in graves." The smaller pieces are somewhat reminiscent of "gizzard stones," but there is nothing to confirm this identification. The field notes for a male burial, Grave 2, Cemetery 3, indicate that "In the left hand were a dozen or more small round white pebbles," besides other miscellaneous oddments. I suspect that the specimens under consideration here may be the same as the lot found in this grave; and I suggest further the possibility that the stones were perhaps once part of a rattle.[9]

The other two lots include pebbles of various sizes and shapes, ranging up to 65 by 56 by 30 mm. Some of the more flattened specimens are perhaps the polishing stones of the field record;[10] others with slightly battered edges or ends, were probably pecking stones. One is ochre-stained, perhaps from lying in a bed of this material in a grave. Most are of quartz, quartzite, or fine-grained sandstone, with an occasional specimen of hard limestone.

Miscellaneous objects and materials.—These include slightly worked or unworked odds and ends made from various materials of relatively rare occurrence. In some instances, the raw materials were available in the region, though perhaps at some distance from the villages where the specimens were found. Others suggest trade with more remote peoples.

There are nine unworked fragments and slivers of petrified wood, of various sizes and shapes; none exceeds 13 cm. in maximum dimension. Most of these, inferentially, came from burials in Cemeteries 3 and 4, usually not more than one piece per grave.

Several small irregular plates of mica, none exceeding 2.6 by 3 cm. in size, are perhaps the remnants of a rectangular piece recorded from Grave 21, Cemetery 4. They are not drilled or otherwise modified.

Two irregular battered quartz crystals (USNM 325531) are presumed to be those found in Graves 6 and 10, Cemetery 2. One is somewhat globular, and about 15 mm. in diameter; the other is flattish, and measures 27 by 22 by 12 mm. They seem to have had hard or long usage, or they might have been carried about in a bag or medicine pouch for a considerable period of time.

The use of chalcedony, presumably from the Badlands, in making edged cutting or scraping tools has already been noted. There are, in addition, two shaped oblong pieces (USNM 325525), rounded at one end and slightly notched or grooved at the other, evidently for suspension by a cord or thong. Both have a well-worn, waxlike appearance. They measure 43 and 53 mm. in length. A third piece (USNM 325537) is conical, with a round base, and measures 15 by 16 mm. Its purpose is uncertain; like the preceding two, it is a grave find.

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[9] Le Raye (Robinson, 1908, p. 164) mentions "dried prarow [prairie dog] and marten skins, tied up, in a form to contain small stones . . .," as among the musical instruments of the Arikara in 1804.

[10] In describing pottery-making among the Mandan, Hidatsa, and Arikara in 1833, Maximilian wrote: "The workwoman forms the hollow inside of the vessel by means of a round stone which she holds in her hand, while she works and smoothes the outside with a piece of poplar bark" (Thwaites, 1904–07, vol. 23, p. 278).

Obsidian is represented by seven irregularly shaped flakes, evidently including three from Grave 6, Cemetery 2, and four from Grave 10, Cemetery 2, as noted in the field records. They range in length from 4 to 6 cm., and for the most part hardly suggest finished implements. Edges are occasionally slightly or partially retouched or somewhat battered, giving one the impression of pieces that have been lying around for a long time. There is nothing to indicate that the natives here utilized the full potentialities of the stone. Its origin cannot be certainly identified, but the nearest known source is probably in present Yellowstone Park, some 500 miles due west in an air line.

Pumice.—In common with many other historic tribes, as well as prehistoric groups, living along the Missouri River, the occupants of the village sites near Mobridge made limited use of the pumice that floated down the river from time to time. Two subangular lumps in the present collection show little or no evidence of wear on any of their surfaces. A third is somewhat elliptical and flattish, measures 11 by 7.5 by 2.7 cm., and appears to have been used for smoothing hides or other moderately large soft surfaces.

Fossils, concretions, etc.—Fossils, concretions, and various oddly shaped pieces of stone were found among the offerings in several graves. The fossils all represent marine invertebrates from the Upper Cretaceous deposits, which are extensively exposed in the stream valleys throughout the upper Missouri watershed and have long been celebrated for the evidences of extinct fauna they contain.[11] Identified forms in the present collection include the following:

Baculites compressus Say
Belemnitella bulbosa Meek and Hayden
Discoscaphites sp. (probably a new form)
Ostrea glabra Meek and Hayden
Halymenites major Lesquereux

The last-named form is evidently the "natural sandstone concretion shaped like an ear of corn," which was found, according to the field notes, in the left hand of a female burial in Grave 12, Cemetery 4.

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[11] At Fort Clark in 1833, Maximilian wrote of the "many impressions and petrifactions of shell-fish, and the singular baculites, which are found everywhere on the Missouri and its tributaries, and even here and there in the beds of the streams . . ." Farther up the Missouri, above the Musselshell River, members of his party collected "most interesting impressions of shells, and very beautiful baculites . . ." (Thwaites, 1904–7, vol. 23, pp. 60–61, 242–243).

It represents, I am told, what is believed to be the petrified filling of an animal burrow, and superficially bears a rather striking resemblance to a segment of an ear of corn (pl. 59, *f*). Since corn held an important position in the religious thinking of the Arikara [12], it is not at all unlikely that the individual whose property the specimen in question once was, cherished it because of its resemblance to an ear of this cereal.

A small flattened oblong chalcedony concretion, whose larger surfaces are marked with a reticulate pattern of natural origin, is undoubtedly the specimen from Grave 3, Cemetery 4, described in the field notes as "a small natural formation of chalcedony which simulated closely the shape and structure of a turtle shell."

Pigments.—In varying amount, paint materials of several different colors occurred in many of the graves. Judging from the field notes, red was by far the most abundant and also of the most frequent occurrence. It is specifically reported from 2 graves in Cemetery 1, 11 graves in Cemetery 2, 2 graves in Cemetery 3, and 13 in Cemetery 4. Much less common and, again judging from the field notes, restricted apparently to Cemeteries 2 and 4, were several other colors, including yellow, purple, green, black, and white.

Among the samples now in the museum collections, various reds are also most common. The characteristic material is a rather dark red, evidently hematite, which is represented mainly by several small lots of powdery or slightly granular substance. This was occasionally mixed with gritty clay, perhaps with animal fat added, and then worked into small flattish oval cakes; one nearly complete specimen (pl. 59, *a*) measures 3 by 6 by 8.5 cm., and there are fragments of one or more others. In a few instances, a gritty hematite mixture was contained in an unworked mussel shell (pl. 59, *b*). Traces of a brilliant red powder, suggesting the vermilion so popular among all the Missouri River and Plains tribes in the early 1800's,[13] prove on analysis to contain no mercury, and so are presumed to be hematite also. A single lump of purplish material, not analyzed, is probably an "off-color" hematite.[14]

The yellow pigment is limonite, another oxide of iron, present only as a powder. A dull greenish earthy substance seems to be largely clay, mixed with some unidentified iron salt. A single lump of very fine soft white material is gypsum.

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[12] ". . . The maize is one of the principal mediums of the Arikkaras, for which they show their reverence in various ways . . ." (Maximilian, 1833, in Thwaites, 1904–7, vol. 23, p. 391).

[13] For which the American Fur Co., according to Maximilian in 1833, charged the Indians at the rate of 10 dollars per pound (Thwaites, 1904–7, vol. 23, p. 99).

[14] Maximilian in 1833 found the Blackfeet around Fort Mackenzie using for blue pigment "the shining earth from the mountains . . . which, being analyzed by Professor Cordier, at Paris, he found to be mixed with an earthy peroxide of iron, probably mixed with some clay . . ." (Thwaites, 1904–7, vol. 23, p. 99).

OBJECTS OF BONE

Artifacts of bone constitute a rather large proportion of the specimens in the present collection. They include a variety of implement types, most of which are present in some quantity and in excellent state of preservation. One or two of the types seem not to have been reported heretofore from the Great Plains or Upper Missouri valley region; but on the whole the material includes a good series of rather characteristic artifacts of the region.

Since most of the articles came presumably from burial grounds and from limited test pits in several village sites, rather than from comprehensive excavations in areas which might be expected to yield bone tools freely, it would seem probable that the present series does not cover the range of types known to, and manufactured by, the former inhabitants of the several sites concerned. Village-site excavations on an extensive and thorough basis would probably bear out the impression gained from the present series that Arikara bonework of the late eighteenth and early nineteenth century was comparatively rich and well-developed, and included a wide variety of artifact types used for different purposes.

Awls.—Awls comprise the largest series of bone artifacts in the present collection. Including fragments as well as complete, or nearly complete, specimens, they total about 60 examples. Without exception, they appear to have been fashioned from the ribs and limb bones of large mammals; no examples made from bird bone are present. Unfortunately, the entire lot bears a single catalog number (USNM 325508); and it is impossible to determine which specimens came from a given site or from a specific locality within any one site.

In grouping the present series for descriptive purposes, I have found it convenient to follow the scheme of classification used by Kidder in describing the awls from Pecos (Kidder, 1932, pp. 203–220). This separates them first into categories on the basis of materials used, whether mammal leg bone or rib; and then further subdivides them, where necessary, according to the amount of work performed in bringing the awls to their final shape. There are in the present series no specimens which do not fall readily into such a scheme; and not all of the kinds recognized at Pecos are to be found among the Mobridge materials.

Less than half the awls and classifiable fragments from Mobridge are of mammal leg bone. Without exception, when the bone is identifiable, it is a metapodial of the deer or antelope; and the remaining specimens, from which the identifying characters have been removed in their manufacture, look as if they came generally from the same source. In all cases, the metapodial has evidently had one extremity removed and has then been split and worked to a sharp strong point.

Among the 16 specimens assigned to this class, none retains the head of the bone intact. Twelve retain one-half of the split head; in seven of these the butt of the awl is from the proximal extremity of the bone, whereas in five it is the distal extremity that was retained. These are generally sturdy serviceable implements, ranging from 7.2 to 12.5 cm. in length, with evenly tapered polished shafts and well-smoothed tips. In two other specimens, the head of the bone has been partly worked down, but with recognizable traces of the articular surface still apparent. They are of more slender construction than the preceding, with a length of 10.7 to 12.2 cm. In the remaining two, the head has been wholly removed and the butt carefully rounded off. They measure 8.7 and 13.7 cm. in length.

Twenty-four specimens are fashioned from mammal rib. They are of two distinct types. Least common, and represented by two examples only, are implements made from rib-shaft sections or from sections of split rib shaft. They tend to be relatively broad and flat, with heavy tips, and show a slight curvature lengthwise. The two specimens are 12.8 and 13.2 cm. long.

Twenty-two specimens appear to resemble in all particulars the rib-edge awls described from Pecos. They are made of a section cut from the edge of a rib or more probably, from the neural spine of a bison thoracic vertebra; the cut edge of the detached section has been ground down until the cancellous tissue is almost entirely removed. This surface, which in nearly every instance still shows cancellous tissue when subjected to close scrutiny, forms the base of a triangular cross section, whose other two sides are formed by the converging faces of the rib. The butts are either rounded off, or else have a sort of pyramidal shape. Most of the examples of this type here are broken; whole specimens range in length from 6.8 to 9 cm., but tipless fragments up to 10 cm. long show that much longer ones were also in use.

Similar objects occur commonly in protohistoric sites of the Great Bend aspect in central Kansas (Wedel, unpublished data); in protohistoric Pawnee sites in east-central Nebraska (Dunlevy, 1936, p. 197 and pl. 12, B–D); in the Dismal River sites of the central Plains (Hill and Metcalf, 1942, p. 197; Wedel, unpublished data); and elsewhere in the region on what appears to be usually a protohistoric time level. I have not seen them in surely prehistoric sites in the central Plains, although publication of additional materials from that area may show that they were also known and used before the protohistoric period. Present evidence would seem to suggest that for the Kansas-Nebraska region, at least, they have some usefulness as a time marker.

As I have suggested in another place, I doubt that the "rib-edge" awls, at any rate in the Plains area, can be correctly so designated. Many of those in the central Plains are as much as 6 to 8 inches long, and show no curvature throughout this entire length. This suggests that they were cut from another bone, one that lacks the slight but consistent curve of a rib. These conditions are met by the dorsal spine from the thoracic vertebrae of the bison, which are perfectly straight for 30 to 40 cm. and have a construction similar to that of the ribs. Incompletely worked "rib-edge" awls sometimes show contours at one end that are indistinguishable from those of the dorsal spine and are not found on bison ribs. I suggest, therefore, that while the shorter "rib-edge" awls may sometimes be from the edge of the rib, the longer ones should be attributed to the dorsal spine and presumably to its anterior margin (cf. Hill and Metcalf, 1942, p. 197).

Digging tools.—These are the familiar Plains type of digging implement or hoe, which was still the principal agricultural tool of the upper Missouri horticultural tribes in the early 1800's. They were fashioned from the scapula of the bison. In each case, one-half to one-third of the original bone has been removed from the proximal end, including the entire vertebral border. The scapular spine has been roughly hacked away or more smoothly cut off, perhaps depending on whether a steel cutting implement or a stone knife has been used; and the ridge along the posterior or axillary border has been similarly trimmed away. Most of the present specimens show rather ragged scars at these points, but in one or two instances the marks are much smoother, as though the cutting was done with a sharp steel tool or else had been followed up with grinding. On three specimens, the distal extremity or "head" of the scapula has been largely or entirely removed; on the others it remains either unmodified or else has the borders of the glenoid cavity slightly notched or cut away. All of the complete or nearly complete specimens in the present collection are well worn and highly polished at the working end. They are from 18 to 34 cm. in length, and vary a good deal in details of width and form.

Shaft straighteners.—Shaft straighteners or wrenches were made from sections of bison rib, or occasionally from the dorsal spine of the thoracic vertebrae of that animal. The bone selected was cut or broken to a convenient length and was then provided with one to three holes each averaging 8 to 11 mm. in diameter (pl. 61, *i*). In several instances the holes are elongated in a direction parallel to the long axis of the bone, and their ends often show exceptional wear polish from the passage or working of a circular stick. Most of the present specimens have raggedly broken ends; one is cut square, another ends in a short cut taper, and still another has a rounded worn end. Five specimens have each a single hole; seven have, or once had, two holes each; and one has three holes spaced at intervals of 2.5 to 3.0 cm. Most show evidence of wear over the entire surface.

Of somewhat different type but possibly related usage is an irregularly triangular piece of bison scapula measuring 17.5 by 5.3 cm. It has a carefully made circular perforation 10 mm. in diameter centrally located 7 cm. from the pointed end. The edges of the hole show some polish, but lack the slight elongation of many of those in the specimens made of rib sections. The bone of which this piece is made is much thinner and lighter than is the case with the rib sections, and it is doubtful that the piece would have withstood the kind of use implied in the rib wrenches. Possibly the scapula specimen was intended for a gage or served in some other less strenuous capacity.

With regard to provenience, three of the rib wrenches were found in graves. The three-hole specimen was with an adult male in Grave 10, Cemetery 2. A two-hole wrench was found with an adult female in Grave 4, Cemetery 3, and a similar specimen with a male in Grave 16, Cemetery 4. The dressed and perforated scapula fragment came from a child burial in Grave 18, Cemetery 4. All other specimens, inferentially, came from village site investigations.

Scored ribs.—There are but two examples of this common Plains artifact type in the present collection. They are made from the rib shaft of a large mammal, doubtless the bison, from which both extremities have been roughly broken off. The ends of the resulting tools are ragged and uneven, with no evidence whatever of smoothing. Each has a series of transverse grooves that extend across the external surface of the bone; the grooves are unevenly spaced and vary considerably in depth and length. The shorter of the two specimens measures 18 cm. in length; it bears 28 grooves distributed unevenly throughout its length except for about 3 cm. at the broader end. There is a perceptible smoothing of the bone lengthwise along the midline and the grooves tend to be somewhat shallower where they are crossed by the smoothed zone, which suggests that the piece may have been a sounding rasp. The second specimen, 21 cm. long, has 17 grooves, all of which are deepest at the center and show no sign of the abrasion that might be expected if a stick had been drawn across the scored surface.

Both these specimens are apparently from village sites, since I find no record of their occurrence in graves. Similar scored implements occur widely in historic and protohistoric village sites throughout the Great Plains (Wedel and Hill, 1942, and references therein; Strong, 1940, passim), as also elsewhere throughout the New World. They have been variously termed tally-bones, musical rasps, etc. It has also been suggested that they may have been used sometimes as pottery paddles.

Objects of cancellous bone.—These specimens, six in number, are oblong to subtriangular in outline, and usually have one round-pointed end, two or more thin sharpened edges, and one thick blunt end (pl. 61, *d*). They range in size from 6 by 4.5 by 1.7 cm. to 11.2 by 5.7 by 1.5 cm., are rather carefully shaped, and consist wholly of cancellous bone. It seems probable that they were fashioned from the distal extremity of the dorsal spine of the thoracic vertebra of the bison, from which both outer surfaces have been ground away to leave only a wedgelike remnant of the inner cancellous tissue (but see Ewers, 1945, p. 15).

In all particulars, these objects conform to the paint applicators used by many historic Plains tribes for decorating robes, tipi covers, and other large leather objects. They have been reported for the Omaha (Fletcher and La Flesche, 1911, p. 354, and fig. 78), the Mandan (Will and Spinden, 1906, p. 171), the Blackfoot (Ewers, 1945, p. 15), and the Pawnee (Wedel, 1936, p. 82 and pl. 9, *g–n*); and, on an earlier protohistoric level, from sites of the Lower Loup focus (protohistoric Pawnee) in east central Nebraska (Dunlevy, 1936, p. 199) and in Great Bend aspect sites (Wichita?) in central Kansas (Wedel, 1942, p. 4 and pl. 7, *k*). I know of no records or unpublished data for their occurrence in prehistoric sites in the Plains. Kidder (1932, p. 238 and fig. 198, *a*, *b*) reports several similar specimens from post-Columbian levels at Pecos, and is inclined to ascribe them to Plains influence.

None of the specimens from the Mobridge sites show any trace of pigment in the interstices, although two have a greenish stain suggesting contact with copper.

Knife hafts.—In this group I have included five specimens, but it must be admitted that only two can be positively so identified. From the close general similarity of the three doubtful pieces to these two, however, it seems highly probable that all once served, or were intended to serve, the same purpose. As a group, they consist of sections of mammal rib, usually well-worn and often polished, with one or both ends cut off square, obliquely, or rounding, and the cut ends carefully dressed down. A portion of one edge is usually deeply slotted, or one end may be deeply socketed. It seems obvious that all were intended for fitting with some sort of thin metal blades or, in other cases, with heavier pointed pieces.

The only complete specimen (pl. 61, *g*) measures 14.5 cm. long and is slightly curved. A heavily rusted iron blade is set securely into a slot running 9.5 cm. along one edge, so that the blade protrudes

10 to 14 mm. all along its length. Another piece is 7.7 cm. long, and has one cut and dressed end. About 7 mm. from this finished end is a deep edge notch, and from this notch the edge is deeply slotted to the broken end. The slot is too narrow to have accommodated anything except a thin metal blade. In two other examples, each with one dressed end, one has a suggestion of an edge slot; the other has an edge notch as in the second specimen described above but is unslotted.

The fifth specimen (pl. 61, *h*) has both ends dressed; the concave or internal rib surface has 4 groups of short incised lines at each edge, the groups on the two edges being opposite one another and including 2, 3, or 4 lines each. At one end, the cancellous inner tissue has been excavated to a depth of about 15 mm., as if to receive a moderately thick object such as a stone knife blade, scraper, or drill point. The specimen may therefore safely be classed as a haft, even though the nature of the blade it once contained, or was intended to contain, must remain conjectural.

Slotted bone knife hafts of the general type represented by these specimens have been found at several other sites in the Great Plains (see Strong, 1945, p. 60). In the Upper Missouri region, they have been reported from the Leavenworth Arikara village site (Strong, 1940, p. 370); the Old Fort Abraham Lincoln Mandan site near Bismarck, N. Dak. (Strong, 1940, p. 365); the Sheyenne-Cheyenne site near Lisbon, N. Dak. (Strong, 1940, p. 375); and from unspecified sites along the Missouri in South Dakota (George and George, 1945, pl. 8). I have the impression, but unfortunately cannot document it, that similar objects have been found in protohistoric Pawnee sites in east central Nebraska; and I have seen in a private collection at Franklin, Nebr., several such slotted bone hafts set with chipped blades, these specimens being ascribed by their owner to a local Upper Republican or late Woodland horizon. Mulloy (1942, p. 80 and fig. 38, No. 10) reports two examples, one of which includes the chipped blade, from the Hagen Site in eastern Montana. There can be no remaining doubt, I think that the side-slotted knife haft with stone blade was in use in the Plains area in prehistoric times, and that, as would be expectable, the same instrument, eventually equipped with a metal blade, continued on into the nineteenth century.

Spatulae.—For this interesting and somewhat variable group of objects, I retain the term used by the collector. Ten specimens are included. They vary rather widely in shape and size, and even more in the degree of care shown in their manufacture and finishing; but certain details appear consistently on nearly every piece, and they intergrade in a rather convincing manner. All are made from long thin flat strips of bone, usually more or less curved lengthwise; commonly, one surface shows traces of cancellous tissue, indicating that they were fashioned from split rib shafts of a large mammal, probably the bison. On the better finished and more highly polished pieces, very little evidence of the cancellous tissue remains. One end is characteristically rounded off or brought to a blunt point; and on nearly every specimen this end shows pronounced polish, often in the form of small irregular but well-smoothed wear facets. These facets look to me like the sort of surface that might result from long-continued rubbing on some moderately soft, yielding material. The other end may be rounded, squared, or more elaborately shaped. Four have decorative incising, edge notching, or other markings on one or both surfaces. The complete specimens vary in length from 13.3 to 27.4 cm., and in width from 1.7 to 2.3 cm.

A representative series of these implements, including also the better-made specimens, is illustrated in plate 60; *e* and *f* are the finest of the lot. Both are made from the internal half of a split rib shaft and retain traces of cancellous tissue on their convex surfaces; both surfaces, the edges, and the ends are highly polished, and the smooth concave face is decorated with fine-line incising or edge notches. The pattern of incising on *f*, done with a deft sure hand, is shown in figure 11. Along the edges of the body of *e* there are 27 and 28 small notches, plus five more on each edge of the deeply notched tail section, which is strongly copper-stained; *c* and *d* each bear an incised X on their smoothed faces, and the latter is copper-stained.

All 10 specimens were taken out of graves; in no instance was there more than 1 per burial. Seven were recorded from Cemetery 2 (Graves 2, 4, 13, 22, 26, 38, and 39), two from Cemetery 3 (Graves 2 and 5) and one from Cemetery 4 (Grave 19). Of the associated crania from these graves, five in Cemetery 2, one in Cemetery 3, and that in Cemetery 4, have been identified as females; one each in Cemeteries 3 and 4 were males; and the remaining burial in Cemetery 2 was that of a child. Since the relative proportion between the sexes among adults in the skeletal series from each of these three cemeteries approximated a ratio of 1 : 1, the fact that 70 percent of the spatulae occurred with females suggests that their distribution depends upon factors other than chance. In other words, I suggest that they were found in the graves of females because of their association with some activity or activities of females among the living populations of the communities concerned.

My search of the available literature on archeological findings at other Upper Missouri or Great Plains sites has revealed no reported instances of exactly comparable artifacts. This may not be of primary significance, for I doubt that there are many collections of comparable scope from the region, and it may be that the unpublished materials in various museums include numerous similar items. In any case,

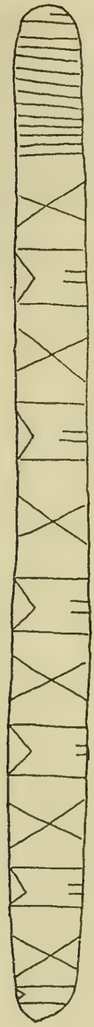

Figure 11.—Incised decoration on spatulate bone implement from Grave 4, Cemetery 2, near Mobridge, S. Dak. (See also pl. 60, *f*.)

comparisons would seem to be impossible at the present writing, so far as the archeological literature is concerned.

As regards the possible use of such implements as this, there is a lead of sorts in the ethnological literature. The highly polished and rounded tips of the spatulae are reminiscent of the working ends of certain bone tools that were apparently associated with porcupine-quill working. One such quill-flattener attributed to the Sioux has been described and figured by Orchard (1916, p. 9 and pl. 5); and what may be another has been reported from the Fort Clark Mandan-Arikara site by Morgan (1871, p. 37 and pl. 4, fig. 13) as a "bone instrument for making moccasins." These are both of much more elaborate form than are even the finest of the present series from the Mobridge locality; but there is still a suggestive similarity in the worn working ends of the various pieces. Unfortunately for this suggestion, there seems to be little evidence, archeological or ethnological, that the Arikara were quillworkers to the extent that would be implied in the numerous "quill flatteners" in the present series. That much of their leatherwork was quill-ornamented is certain; but the limited examples found in the burial sites could as well be the results of intertribal trade as of a local art. For the moment, therefore, we must confess that the identification suggested is nothing more than a possibility.

Whistles.—There are three of these, all from burials in Cemetery 4. They are simple affairs, made by trimming the articular ends from wing bones of large waterfowl, and then cutting an opening near one end of the straight or slightly curved tube thus produced (pl.61, *a*, *b*). All of our specimens are made from bones of the white pelican (*Pelecanus erythrorhynchus*), two being ulnae and one a humerus. Two are complete; the third is broken off at the opening. In length, they range from 12.5 to 18.7 cm.; in diameter, from 1 to 1.7 cm. The neatly cut side openings are oblong to triangular in outline, and vary in greatest diameter from 7 to 11 mm. All are well smoothed; the largest specimen has a high polish (USNM 325507).

There is a fourth specimen made from the shaft of a white pelican ulna, which may be an unfinished whistle. Both articular ends have been unevenly cut off and left unfinished; the bone has not been otherwise modified. This piece, whether intended to be a whistle or something else, is also a grave find, but from Cemetery 2.

Virtually identical bird-bone whistles, or war pipes, as seen among the Mandan in 1833 by Maximilian, are illustrated by Bodmer (Thwaites, 1904–7, vol. 25, pls. 54 and 56). According to Maximilian (Thwaites, 1904–7, vol. 23, pp. 291, 298, 350), various sizes and kinds of bone whistles served as badges of membership in the age societies of the tribe, their size apparently increasing as the individual advanced into a higher society. He observed also that "all the warriors wear small pipes [i. e., whistles] round their necks . . ."

Bird-bone whistles of closely similar type in the ethnological collections of the U. S. National Museum are attributed to the Arapaho, Sioux, and other Plains tribes.

Incised tubes.—From the burial of a male in Grave 10, Cemetery 2, according to the field notes, were taken seven bone tubes. One of these is further described as "a bone tube made from the leg of a heron;" the others were "close to the right hand" and comprised "six polished bone gaming tubes." I suspect that these last six include five incised specimens now cataloged together under one number, USNM 325556, and perhaps also a single plain tube of similar size and shape lotted with other objects under USNM 325503.

The five incised pieces are closely matched series in every particular (pl. 61, *c*). Each is slightly curved, with a flattish cross section; they range in length from 8.7 to 9.8 cm., and in diameter from 1.3 to 1.8 cm. The ends are carefully cut off and dressed smooth. Encircling both ends of each tube is a pair of fine incised lines 2 to 4 mm. apart and occurring at about the same distance from each end of the tube. The specimens are uniformly well-worn and smooth; one appears to be ochre-stained. All are made from the humerus shaft of the white pelican.

The sixth specimen is broken at one end; otherwise it closely matches the above-mentioned five pieces in size, shape, and material. There are a few short nicks near each end, and the ends have been neatly cut and dressed; but it lacks the paired circling incisions at each end as well as the high polish of the above pieces. If not actually a part of the foregoing group, it seems highly probable that this was an unfinished article destined for a function similar to that of the decorated and polished pieces above described.

Perforated phalanges.—These specimens, four in number, were found in association with a male burial in Grave 16, Cemetery 4, along with a large and varied assortment of other furnishings. They are made from the phalanges of the deer. The distal extremities of the bones have been ground away entirely while the proximal extremities have been pierced and then hollowed out, so as to produce, in effect, four irregular hollow conical pieces ranging in length from 36 to 45 mm. All are well-worn and polished from use, besides being unusually dark in color. They bear no incising or other markings (pl. 62, *d*).

Ethnological specimens in the United States National Museum collections suggest two possible uses for these four objects, namely, (*a*) as bangles attached to fringes or thongs on clothing, or (*b*) as gaming pieces for the widespread ring-and-pin game. Where similar phalangeal objects occur on native costume, they seem to include usually many more pieces per garment. Ring-and-pin game sets, on the other hand, include relatively few bones, sometimes as few as three, and seldom more than twice or three times that number (Culin, 1907, pp. 527–561). I am inclined therefore to view the present series as evidence of the existence of the ring-and-pin game rather than as a suggestion of costume decoration.

Similar phalangeal objects, not always as extensively modified as the present examples, have been found from time to time in other historic and prehistoric Plains Indian village sites. I recall no instances, however, of their occurrence in sets; usually they come singly, suggesting use as pendants. Since they have been found mainly in house fill, cache pits, and refuse deposits, rather than in graves, it cannot be stated with certainty that they were in every case used singly by their erstwhile owners. It is possible, in other words, that only parts of game sets have been found.

Beads.—Bone specimens identifiable as beads are surprisingly rare in the present collection, perhaps partly because of the relative abundance of the more showy glass and other trade materials available at the time period indicated. There are, in fact, not more than six tubular objects that can with some reason be regarded as useful for bead purposes. All are evidently bird bone. They include 3 pieces with cut and dressed ends, from 16 to 55 mm. long, and showing worn or polished surfaces. A fragment of pelican ulna (?) exhibits cut and broken ends, presumably from the detachment of the articular extremities, and may represent a bead blank. Another piece, measuring 11 by 63 mm., has irregularly fractured ends and a well-polished surface; it bears a deep narrow transverse cut 8 mm. long and has a cut V-shaped notch in one end that somewhat suggests the vent in a whistle. Perhaps the piece represents a whistle fragment intended for reworking into a bead.

The field records make no mention of bone beads in the grave lists and I am unable to state whether the few beads now in the collection as described above are from the cemeteries or were found during the brief tests in one or another of the nearby village sites. In any case, it seems fairly certain that bone beads were far less important than copper, iron, and other trade items in the material culture of the Arikara in the period represented by the present collections.

Needle(?).—There are two or three fragments of dressed bone that I have assigned somewhat uncertainly to this category. One is a carefully shaped and finished piece 85 mm. long, subrectangular in cross section and showing traces of cancellous tissue on one surface. Both ends are fractured. In diameter the piece is uniformly about 3.5 by 5 mm. Closely similar in all particulars is another 29-mm. fragment, which has a 1-mm. eye drilled through the short diameter some 6 mm. from a rounded butt. Despite its similarity to the larger piece, the two do not fit each other, nor is it possible to determine whether the two fragments were found in association or widely separated. I am somewhat intrigued by the possibility that this specimen, or an instrument like it, might have been the pin used in the ring-and-pin game, of which other evidence here has already been adduced; but of course, a wooden pin is as likely to have been used as one of bone. Other than the two fragments above noted, the collection includes nothing suggesting a needle.

Animal teeth and claws.—As noted in the burial lists, the perforated and unperforated teeth of various large mammals, including man, were occasionally found in the graves. Some of these may have been fortuitous associations; and unfortunately it is impossible to be certain in every instance whether the particular specimens in the cataloged collection came from graves or were found in village site digging. I would suppose that the drilled specimens, at least, were probably taken from graves, but even here the field information leaves some room for uncertainty in at least one instance.

The perforated teeth were doubtless used as parts of necklaces. In each case the drilling was biconical, and passed through the root, so that the tooth hung point or crown down. According to the field record, two elk canines were found—one in Grave 3, Cemetery 2, the other in Grave 5, Cemetery 4—but a single specimen only (USNM 325530) has come to light in the collections (pl. 62, *i*). By the head of a female in Grave 6, Cemetery 4, was a human third molar (USNM 325532; pl. 62, *h*). With a male skeleton in Grave 13, Cemetery 4, was the canine tooth (USNM 325553; pl. 62, *e*) of a black bear (*Euarctos americanus*). Two unperforated black-bear teeth are recorded in the field notes as coming from a male burial in Grave 2, Cemetery 3, but these I have not been able to locate. A miscellaneous lot of unworked teeth (USNM 325553) includes five canines of the Plains wolf (*Canis lupus*), plus two molars and four or five incisors of the elk (*Cervus canadensis*).

Animal claws, some of them perforated, are reported in the field notes from two graves in Cemetery 2, one in Cemetery 3, and four in Cemetery 4. Of these, I have been able to locate only two specimens; both carry the same catalog number (USNM 325551) and are part of a large lot of miscellaneous bones. They are drilled at the enlarged proximal end, that is, through the articular extremity, so as to hang point down. One of the two, 5.4 cm. long, is a claw from the forefoot of the grizzly (*Ursus horribilis*); the other, much worn and scarcely half as long, is in all probability from the hindfoot of an animal of the same species (pl. 62, *f*). Maximilian, Bodmer, Catlin, and other contemporary observers have left us ample documentary and pictorial evidence of the extensive utilization of grizzly bear claws by the various Indians of the Upper Missouri for adornment of their persons.

Bird claws.—These, like the animal claws and teeth, were doubtless used as parts of necklaces or singly as pendants. They were drilled through the heavy articular end so as to hang point down; but since the conformation of this portion of the claw is such that a string or sinew could be easily and securely attached without recourse to a drilled hole, it is possible that some of the apparently unworked specimens also were actually used as ornaments.

An unusually fine series of perforated eagle claws occurred with a male skeleton in Grave 15, Cemetery 4. They were 23 in number, all with biconic perforations from 2–5 mm. in diameter, and ranging in length from 3.5 to 4.3 cm. (pl. 62, *a*). They lay about the neck of the burial, and were undoubtedly the remains of a necklace. Species identification of the claws is uncertain; both the bald and golden eagles were available to the Indians of the locality at the time represented, and either or both species may have contributed to the makeup of the necklace.

There is one other pierced eagle claw in the collection; it resembles in all particulars those in the necklace, except that the perforation is cylindrical and about 2 mm. in diameter. Presumably, it is the specimen allocated in the field notes to a male burial in Grave 10, Cemetery 2.

Included in the same miscellaneous lot as the animal teeth and claws referred to above as part of USNM 325551 are six unperforated eagle claws and seven or eight smaller but similarly shaped members that are probably from a hawk. We have no instances of the indisputable use of these smaller claws as ornaments, but further work might show, of course, that they were also employed on occasion.

Miscellaneous worked bone.—There are several lots of bone fragments that have been cut, polished, bored, or otherwise modified. Some are perhaps unfinished artifacts; others are parts of broken artifacts that have been either discarded as useless or else have been somehow modified to serve a secondary function. They include chiefly pieces of mammal scapulae and ribs or dorsal spines.

Worked scapula fragments include several pieces that are without question parts of broken hoes or digging tools. Rounded or oblong scraps frequently show one or more cut and dressed edges; all have a high polish from prolonged use. Presumably they were for cutting or scraping soft yielding materials.

A 35-cm. section of bison rib has been broken off at both ends so as to leave two long jagged points. Both ends are worn smooth, and one is highly polished; the midsection of the piece is unmodified.

A thin smoothly scraped slip of bone, transversely flat and longitudinally curved, has two edges and one end carefully dressed down (pl. 62, *g*). Near the dressed end are two biconic perforations each 2 mm. in diameter. The other end is broken. Somewhat similar but smaller is a fire-whitened piece measuring 19 by 8 by 3 mm., also curved longitudinally, and with all edges finished smooth. Near one end is a small perforation, suggesting that the piece was intended for suspension in a necklace or in some similar capacity.

Unworked mammal and bird bones.—Included together with worked and unworked teeth and claws noted above, under a single catalog number, USNM 325551, are numerous unmodified skeletal parts of small mammals and birds. I suspect that their provenience in the field was varied, but that many or all came from one or another of the burial grounds listed as Sites 2, 3, and 4. The field inventory of grave finds includes mention of bird beaks and skulls, and also of prairie-dog skulls, from not fewer than seven graves. Unfortunately, it is impossible at this time to determine which bones came from which burial—or even to be sure that any of the cataloged beaks, skulls, and mandibles are from the burials rather than from middens or elsewhere in the village sites.

Among the cataloged small mammal remains the following have been identified: Skunk (*Mephitis mephitis*), skull and both halves of a mandible, all probably from a single individual; mink (*Mustela vison*), maxilla and three mandible fragments; bobcat or lynx (*Lynx* sp.), incomplete mandible of juvenile; muskrat (*Ondatra zibethicus*), two mandible halves and several incisors; and marmot or woodchuck (*Marmota*), portion of left maxilla. Other teeth and mammal bone fragments are unidentifiable; but there is nothing in the available series to suggest the prairie dog (*Cynomys ludovicianus*).

Bones that are certainly or probably from birds are mostly so fragmentary as to be unidentifiable or else are parts which have little or no diagnostic value. There are several beak fragments that somewhat suggest long-billed waterbirds or waders. The single identified item is the mandible of the raven (*Corvus corax sinuatus*).

Conspicuously absent from the bone material at hand from the Mobridge sites are several mammals and birds whose presence would certainly be expectable in the locality, if it is assumed that the present sample is representative. There are, for example, no horse or dog remains although the former at least was described as plentiful about the Arikara villages by Brackenridge in 1811. Absent also are beaver, coyote, and other small fur bearers; and of course the waterbirds and gallinaceous forms that must have been fairly plentiful on the Missouri and its tributaries and in the nearby grasslands. It is quite probable that extended excavations in the village sites and middens, where the cast-off refuse from food-getting finally accumulated, would materially extend the faunal list and would include additional forms that were certainly available to the Indians. The collections at hand, in other words, are very likely from the burial grounds and represent forms whose bones either furnished raw materials for articles accompanying the dead or which were buried as totemic symbols or as "medicine" with certain individuals.

OBJECTS OF ANTLER

In marked contrast to the abundance of bone artifacts, there are only four specimens of worked antler in the present collection. They consist of relatively short sections, cut from the tip so as to include a portion of the adjacent antler shaft. It is impossible to determine whether these pieces are from the deer or elk; probably large individuals of the former would have been capable of providing the raw materials for all of the present specimens. Such well-known heavy duty implements as hide scrapers and mallets, which required substantial materials such as could only be gotten from the shaft of the elk antler, are not here represented.

Awl handle.—This piece is a slightly curved truncated cone, neatly cut off and smoothed at each end (pl. 61, *e*). It measures 7.2 cm. long, and tapers from 1.6 to 0.9 cm. in diameter. At the larger end, three parallel incised lines nearly encircle the specimen, leaving a gap of 1.7 cm. The smaller end is similarly encircled by two parallel incised lines, interrupted by a 9-mm. break exactly corresponding in position to that in the lines at the other end. From the center of the small end, an iron object protrudes about 2 mm.; and a crumbled portion of the antler shows a streak of iron rust deep in the interior of the specimen and about 15 mm. from the end. Though badly oxidized, the iron suggests an awl fragment or punch. In the center of the large end a 3-mm. hole has been drilled deeply into the antler, perhaps to seat another awl point or punch. The entire handle is well-smoothed and has a dark discolored look. It was found with a female burial in Grave 17, Cemetery 4.

Knapping tool (?).—Accompanying a male skeleton in Grave 13, Cemetery 4, was a well-smoothed antler section, 12.5 cm. long, with a finely nicked tip. The base, 2.6 cm. in diameter, was neatly cut off; it has a somewhat irregular cavity 3 to 4 cm. deep, but I am not certain whether this was purposefully made or is rotted out. Just above the base, two carefully incised lines 4 mm. apart encircle the piece. The surface is otherwise unmarked.

Worked tips.—Included here are two objects that have been worked, but whose function remains obscure. One of these, measuring 13 cm. in length by 2 cm. in basal diameter, is curved and has a cut base which has been excavated or rotted at the center. The entire piece is well-smoothed from use, but the tip is unmarred by the nicks that one would expect in a knapping tool. If the base was indeed excavated by the original maker, another tool handle is here suggested.

The remaining object is a short, heavy, well-preserved antler tip, measuring 12.5 cm., and with a worn, nicked tip. The butt is irregularly broken or battered off, and has no traces of a socket. This may be another flint-knapping tool.

OBJECTS OF SHELL

Work in shell constitutes a relatively minor proportion of the materials from the Mobridge sites, this fact, of course, being in line with findings at most other archeological sites so far excavated in the Great Plains and on the Upper Missouri. Of the readily available local fresh-water shells, only a few unworked or, at best, slightly worked, examples are at hand. Evidently preferred for ornamentation of dress and person were marine shells of various kinds, most of which seem to have been West Coast species.

Among the identifiable marine shells in the present collection, the following species occur:

Olivella biplicata Sowerby; 51 specimens, used as beads
Olivella boetica Carpenter; 64 specimens, used as beads
Dentalium sp.; 17 specimens, used as beads
Cypraea moneta L.; 1 specimen, used as bead or pendant
Marine conch, species unidentifiable; used for heavy beads and gorgets

Fresh-water forms, whose shells show no modification, include the following:

Proptera alata megaptera Rafinesque
Lasmigona complanata Barnes
Lampsilis ventricosa occidens Lea
Lampsilis siliquoidea Barnes

Beads of whole shell.—Included here are 134 beads of various kinds, made of shells representing four marine and one fresh-water species. All retain substantially the original form of the shell, except for such slight modification as was required to permit stringing or suspension.

The great majority of these, 115 in all, are made of *Olivella* shells. According to the field record, *Olivella* beads were found in nine graves—five in Cemetery 2 and four in Cemetery 4. In most of these, the number of beads per grave was very small, ranging from 1 to 12; but an infant burial in Grave 27, Cemetery 2, was accompanied by "27 large and 50 small" *Olivella* beads. At present, all of these shells are recorded under one of three catalog numbers, and it is impossible to identify any of the individual grave lots.

As stated, these beads are made of virtually unaltered shells, except that the spire has been ground away to permit passage of the string. The smaller of the two species represented (*Olivella boetica*) is somewhat the commoner; individual shells range in length from 11 to 15 mm. (pl. 63, *d*). The others (*O. biplicata*) are from 17 to 30 mm. long, and have a somewhat larger opening for passage of the suspension cord (pl. 63, *c*). Both species here considered are West Coast forms, and the shells doubtless were brought in by intertribal trade; but the route by which they reached the Upper Missouri region remains uncertain. I have been unable to find these two species named in the available published lists of molluscan fauna from archeological sites in the Great Plains or on the Upper Missouri.

Dentalium shell beads, 17 in number, were found by the head of a single burial—that of a child in Grave 39, Cemetery 2. They are slender, trumpet-shaped objects, 27 to 30 mm. long, with the tips ground away to permit stringing lengthwise (pl. 63, *f*; USNM 325543). Although species identification is not possible, it seems likely that these shells were also received through barter and originated somewhere on the West Coast. According to Maximilian, the Blackfeet in 1833 were obtaining *Dentalium* by barter from the nations west of the Rocky Mountains, notably the Kutenai (Thwaites, 1904–7, vol. 23, pp. 98, 259); and it is probable that the Arikara, like the neighboring Mandan and Hidatsa, were supplied by an extension of this trade system.

Among the miscellaneous items accompanying an adult male burial in Grave 3, Cemetery 4, was a single shell of a marine gastropod identified as *Cypraea moneta* (USNM 325545). It has a small end perforation, and was undoubtedly used as a bead or pendant (pl. 63, *g*). This, incidentally, is not a West Coast species, nor did it occur until comparatively recent times in American waters. It is a cowry native to the Indo-Pacific region, and represents one of two closely related money cowries whose shells have been widely distributed by man throughout the world. In North America, it has been recorded archeologically from a prehistoric mound in Marshall County, Ala., and also from the general vicinity of the Otonabee "Serpent" mound group in Peterborough County, Ontario, Canada. According to Willoughby, "cowry shells were sold to the Indians by the Hudson's Bay Company late in the eighteenth or early in the nineteenth century" (see Jackson, 1916, p. 68). This trade, if correctly dated by Willoughby, coincides nicely with the historical facts regarding the Indian occupancy of the Leavenworth Site.

One other whole shell ornament remains to be noted. It is the shell of a fresh-water gastropod identified as *Goniobasis* sp. A 1-mm. perforation has been made in the wall on one side, so that in stringing, the shell hung point down (pl. 63, *e*). Its exact provenience is unknown.

Disk beads.—With a child burial in Grave 3, Cemetery 2, were found six disks of varied size and thickness (pl. 63, *i*). They range in diameter from 8 to 15 mm., and in thickness from 4 to 6 mm. Five are biconically perforated at the center. The sixth and smallest also has a central perforation of the usual sort; and, in addition, has two parallel cylindrical 1-mm. holes bored edgewise through the disk, one on either side of the short central perforation. I do not recall seeing similar examples of this particular style of multiple boring from the Plains area.

Massive beads.—Seven of these objects were found; all are of unspecified provenience but presumably were taken from burials. Six are short, heavy, barrel-shaped pieces, occasionally somewhat compressed laterally in one direction, and with flattened ends (pl. 63, *h*). They measure in length from 22 to 27 mm., and in maximum diameter from 15 to 20 mm. They are cylindrically bored through their longest axis, the holes being 2 to 4 mm. in diameter. They were evidently fashioned from the shell of some thick-walled marine conch.

Of somewhat similar form but less massive is another specimen measuring 35 by 8 mm. This, too, tapers slightly toward each rounded end, and has a cylindrical lengthwise perforation. It is chalky, and rather softer than the foregoing.

Gorgets.—There are two perforated shell disks that were undoubtedly used as gorgets or neckplates (pl. 63, *a*, *b*). One is from a female burial in Grave 19, Cemetery 2; the other is of unspecified provenience. The first is a slightly curved subcircular plate approximately 66 to 68 mm. in diameter. In the center is a 7-mm. perforation. The undecorated surfaces are extensively pitted and weathered.

The second specimen is somewhat larger, its diameter ranging from 65 to 75 mm. At the center is a pair of shallow pits 13 mm. apart, apparently representing unfinished attempts, or abandoned intentions, to pierce the object. Just above these, 23 mm. from the edge and also 13 mm. apart, are two drilled holes each 3 mm. in diameter. Like the first, this specimen is undecorated, and its occasionally almost porcelaneous surfaces are deeply and extensively eroded. Presumably, this and the preceding piece (USNM 325539) were cut from the heavy wall of a marine conch.

Unworked shells.—The field records indicate that one, or rarely two, unworked shells of fresh-water mussels were found in each of 10 graves, including 7 in Cemetery 2 and 3 in Cemetery 4. Eight of these occurrences involved single specimens; the others consisted of two specimens each. With two exceptions—one in each of the two cemeteries concerned—there was no direct evidence as to the purpose of these accompaniments. The exceptions are shells of *Lampsilis siliquoidea* which were found full of red paint, a function for which, of course, no modification of the shell was needed. The other examples may have served a similar purpose at one time; or they could have been used as spoons, scrapers, digging tools, or for like uses.

All of the four fresh-water species represented by the unworked shells in this collection are common forms locally. Since they normally shun any but clear streams, it is probable that they were gathered not from the heavily silted waters of the Missouri but rather from such sandy tributary streams as the Grand River, Oak Creek, or other nearby silt-free watercourses.

OBJECTS OF PERISHABLE MATERIALS

It is not to be expected, of course, that a great wealth of perishable goods would occur in graves situated entirely in the open, as were those here reported from the Mobridge locality. At the same time, the comparative dryness of the region and the relative recency of the latest of the four cemeteries, operated toward the preservation here and there of items that, given another century or two underground, would probably have vanished without a trace. Meager as the evidence admittedly is, it nevertheless furnishes interesting glimpses of native crafts and industries not usually exemplified in archeological collections from the Great Plains.

Among the perishable items and materials here inventoried are included the remains of leather garments, pouches, and ornaments; porcupine-quill work; hair products; worked wood; and various kinds of vegetal remains.

LEATHERWORK, HAIRWORK, AND QUILLWORK

Ornamented leather shirt.—This piece (USNM 325474) is presumably from Grave 18, Cemetery 4, reported in the field notes as that of an "adolescent wearing a leather shirt profusely ornamented with copper bangles and long copper tubes. As a result of this, most of the shirt was preserved and the upper part of the body mummified." Unfortunately, the shirt is now incomplete and in wretched condition; its remnants give little or no hint as to the original form of the garment, though there are interesting hints as to its decorative treatment.

The decoration on this garment was achieved by the use of copper or brass cones and tubes, short cylindrical glass beads, and porcupine quills. The metal tubes, ranging in length from 42 to 90 mm. and in diameter, from 5 to 6 mm., were apparently fastened by a simple spot stitch, that is, the thong passing through them went under the leather and then emerged again a short distance away to enter the next tube, proceeding always in the direction of the work. Between contiguous tubes, a tightly knotted thong held two copper cones which were free to swing at their lower expanded ends. Although we cannot now be certain, it seems likely that such paired conical "tinklers" occurred regularly between each pair of the tubes. Unfortunately, we cannot be sure, either, whether these tubular and conical pieces occurred only on the front of the garment or alternatively, extended over the shoulders and, perhaps, onto the back.

The remains of at least two rows of beadwork, some 65 or 70 mm. apart, are visible on the garment. Dark blue and white beads alternate; they are short cylinders, 4 to 5 mm. long by 2.5 to 3 mm. in diameter. Each bead is on a stitch slightly oblique to the general direction of the row, so as to produce a serrate effect. The sewing element is sinew.

Here and there on the leather fragments may be seen lines of porcupine-quill work. Uniformly, they are very narrow, seldom exceeding 2 mm. in width. Wherever I have dissected the bands under a binocular microscope, the quills are attached by loop-stitching, with an additional thread employed along one edge. As in the case of the beads, the sewing was done with sinew only.

Hardened masses of stringy material may be detected at a few points, and I suspect that these represent fringes of leather along an edge, an opening, or a seam. A single wide (5 mm.) flat strip apparently 10 to 12 cm. long shows a greenish tinge, plus impressions made by 5 to 6 mm. strips of copper pressed tightly about it. Other examples of this sort of work, in which the thong has not been pressed flat, have been discussed in the section on copperwork.

There is no evidence that this garment ever carried wide bands or large units of quillwork, comparable to the sleeve bands, rosettes, and other features found on many historic Plains Indian garments.

Ornamented headband.—This specimen (USNM 325501), though shrunken, warped, and obviously incomplete, is of considerable interest. It consists basically of two cut pieces of leather, each originally 3.5 to 4 cm. wide by 8 cm. long, which were sewed together with sinew to form a single strip. Ten copper or brass buttons, each 22 mm. in diameter, were attached to this in a row down the center, with their edges touching or very slightly overlapping; the loop at the back of each button was inserted in a small hole punched through the leather, and a single thong was threaded successively through each loop and then securely knotted just beyond the last button at each end. The only two buttons in the series that I have been able to partially clean with acid show no identifying marks on the reverse side.

Just visible on each side of (i. e., above and below) the row of buttons is a line of porcupine-quill work 3 to 4 mm. wide running the full length of the leather strip. The quills are fastened with sinew in a loop-stitching technique, i. e., each quill is caught by the sinew between loops at the bottom, folded under itself, and then passes diagonally across to the next position at the top, where another fold and stitch are made (see fig. 12). There is no filler, nor are there any stitches along the center of the band. The stitching has an added

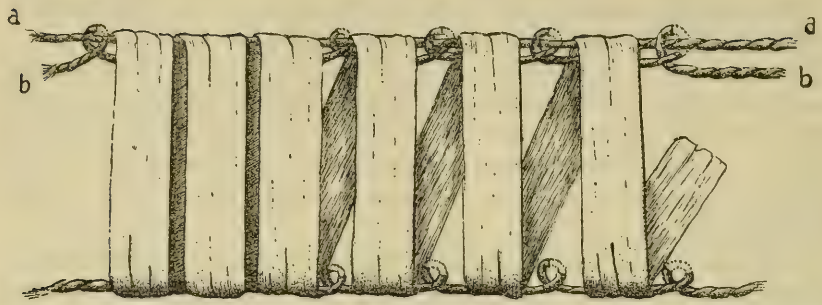

FIGURE 12.—Method of fastening porcupine quills to leather, showing additional sewing element (*a*) of sinew; Cemetery 4, near Mobridge, S. Dak

thread, also sinew, along one edge (the top?). These methods of quill attachment are well illustrated by Orchard (1916, figs. 4 and 11). The middle portion of each line of quillwork consists of 4 cm. of quills dyed red; this is flanked by blocks of undyed (or yellow?), and then of dark-blue or black, quills.

Outside the rows of quillwork, sewing holes are visible here and there along the rather irregular edges of the strip, indicating that the piece was at one time part of a larger item of headgear. Under the same catalog number, there are some small blue and white glass beads, and a few more metal buttons; and the field notes would seem to indicate that the glass beads, at least, were probably originally a part of the same garment in which the above-described headband was used (pl. 64, *c*).

Leather rosette.—This piece (USNM 325474), illustrated in plate 65, *d*, is presumably the "circular ornament" found with a female burial in Grave 1, Cemetery 4. It is of dark-brown or black leather, almost feltlike in appearance, with a diameter of 85 mm. The edge is deeply serrate, with the serrations averaging about 2 per cm. On one surface, shallow grooves run, raylike, from a 6-mm. central perforation to each of the marginal indentations. Each serration is minutely perforated, as though by a fine wire or sewing thread, and similar small holes are scattered here and there over the surface. The reverse side is plain and ungrooved. I am inclined to think the holes mentioned may have been made by the thread used to hold the piece to a garment or other foundation of soft material.

Pouch fragments.—Of the various pouches of leather, fur, bison hair, etc., reported in the field notes from several graves in Cemeteries 2 and 4, there are no certainly identifiable remains now at hand. A few small bag fragments, more or less uncertainly so identified for present purposes, are worthy of brief mention.

One small fragment 4 cm. wide looks very much like the lower end of a small individual medicine bag. I suspect, but cannot be certain, that the two short sides of this piece are stitched; it was apparently made by doubling a long strip of leather back on itself and then stitching the edges, the bottom thus requiring no sewing. It is tightly packed with some unidentified substance.

A second tiny fragment, heavily stained with red paint, shows two stitched edges lying close together but apparently not secured to each other. To these are attached several narrow fringes and a blue glass bead. They suggest the corner of the opening of a small pouch which probably once contained red paint.

A third fragment, unlike the two preceding, was made of a piece of leather with the hair still attached. No sewed edges or seams are visible. In what may have been the inside of the bottom, or of one side of the pouch, assuming that it was such, are a number of small glass beads. Several round-bottomed depressions appear to be casts of small metal bells, of large globular beads, or of some other spherical objects. Above these, on the walls of the erstwhile pouch(?), are numerous fine closely spaced corrugations, stained greenish as from contact with copper. Among the specimens at hand, only the coiled wire bracelets described on page 156 could have produced impressions such as these. The field notes, however, do not indicate that such bracelets were found in a pouch. If the impressions in question were not so produced, I am at a loss to explain their origin.

Braided human hair.—Of the "braided hair headdress" found in Grave 10, Cemetery 4, only two pieces are at hand. Both are made of dark-brown, nearly black, hair identified as human; and each consists apparently of six loosely twisted strands. The braids are flat, from 2 to 3 cm. wide, and measure 16 and 32 cm. in length. There is no indication as to how much longer each of the pieces may have been originally, nor do the field notes amplify the simple statement that a braided hair headdress was present (pl. 64, *d*).

Hair tufts.—There are five or six of these, plus some small fragmentary bunches of hair that possibly represent additional examples. The hair is predominantly human, mixed with some of bear or bison. Of the relatively complete specimens, all are characterized by one end that has evidently had some plastic substance, perhaps a resin or other adhesive, pressed around the bunch of hairs and formed into a blunt tip (pl. 64, *a*). In some cases, this was a relatively small wad that barely held together the ends of the fibers. Three specimens show distinct traces of red pigment on the adhesive, with the coloring extending some distance down the hair fibers. In length, the tufts range from 10 to 12 cm.

There can be no doubt, I think, that these hair tufts were attached, when in use, to leather or other garments. The portraits painted by Catlin and Bodmer in the early 1830's among the Upper Missouri tribes clearly show this type of adornment on headdresses, shirts, leggings, moccasins, and on women's dresses. Among the tribes so represented in these paintings are included the Arikara, Mandan, Dakota, Blackfoot, Comanche, Omaha, Oto, Kansa, and Osage. Maximilian makes frequent mention of hair tufts in describing the dress of Indians of various tribes seen by him on his Missouri River trip (Thwaites, 1904–7, vols. 22 and 23, passim). Unfortunately, there is no way of determining on what sort of garment the present examples originally occurred.

Of somewhat different type are two or three other hair tufts, for none of which the exact grave provenience can be ascertained. In each case, they consist of small conical copper or brass tinklers, 20 to 23 mm. long, which were seemingly sewn at the apex to a leather garment, so as to hang side by side in pairs. The thong by which they were evidently held in place was knotted, with the end passing out through the lower end of the cone and there surrounded by a tuft of hair (pl. 64, *b*). Just how the hair was secured in the cone is not clear, although in one example there is a suggestion of a plastic coat or adhesive which just shows below the larger end of the metal cone. It is possible that these objects were intended for attachment to moccasins.

In light of Stirling's finds at the Leavenworth Site, it may be of passing interest to note that in a paper published many years ago Bushnell (1909, pp. 401–425) observed that "the Western Indians did not use buffalo hair to the same extent, or for the same purposes, as did those east of the Mississippi." He cites Hunter for the manufacture of blankets "among the Osage and their neighbors;" and calls attention to an incident reported by Brackenridge, who saw a blind Arikara "in consequence of a dream" making a blanket with "coarse threads, or rather twists of buffalo wool mixed with wolf's hair . . ." Though Bushnell is disinclined to accept Brackenridge's inference that this was perhaps the first effort by a member of the Arikara tribe at bison hair weaving, it is noteworthy that few, if any, of the other early nineteenth century observers in this region include the art in their accounts of the native peoples. Tabeau, whose stay among the Arikara gave him an exceptional opportunity for firsthand observation, in discussing the importance of the bison to the Upper Missouri Indians, says that "the spun wool yields the women ornaments and other superfluities" (Abel, 1939, p. 72). Apparently nowhere in the early historic literature does there appear a clear-cut statement that the northern Plains Indians wove articles larger than ropes, halters, belts, bags, etc., from bison hair. And, so far as I am aware, the available archeological data confirm the inference that the

Arikara, as presumably their neighbors, did not manufacture garments, blankets, and similar larger articles from this material.

Porcupine-quill work.—The presence of porcupine-quill decoration, always in very limited amount, has already been noted in one or two instances in describing various articles of leather from the Mobridge sites. Additional examples, noted here, although few and unimpressive are nevertheless of interest. There are no pieces at all suggestive of the quillwork bands and rosettes shown on the costumes painted by Catlin, Bodmer, and others. All of the available examples are limited to narrow lines of decoration or to wrappings on materials no longer determinable.

Several small scraps of worked leather, bearing the number USNM 325538, appear to be from an infant burial in Grave 18, Cemetery 2, from which were also taken 17 "quill-wrapped" (actually copper-wrapped) wooden objects that have been described elsewhere. Two of these scraps have single-line quill ornamentation. In both, the quills, now black in color, are fastened at top and bottom by loop-stitches, with an additional element added to one (the top?) edge. All sewing was done with sinew, not commercial thread (see fig. 12).

There are faint traces of what may have been quillwork on one of two moccasins (USNM 325474) found in Grave 19, Cemetery 4, which contained a female burial. Close examination indicates that the only quillwork here was a simple edging to one side of the ankle flap, made by using the quills in the same fashion as one might use an ordinary thread to prevent unraveling at the edge of a woven article. The quills have been dyed red.

Although the present collection includes no objects wrapped with quills, it is evident that this technique was also known. From Grave 39, Cemetery 2, came a small bundle of such wrappings, They consist of a springlike mass, with flat loops about 8 mm. wide by 1 to 3 mm. thick. The successive quills were spliced by twisting together the two ends and then presumably turning them under the adjacent wrappings (see Orchard, 1916, fig. 6). There is nothing to indicate, of course, the nature of the material wrapped, but strips of rawhide were frequently used for this purpose among the historic quillworkers of the northern Plains and adjacent regions.

Of the "flat piece of wood 3 inches long by ½ inch wide, wrapped with porcupine quills," recorded in the field notes as from Grave 1, Cemetery 4, I find no trace in the present collections.

WOODWORK

The Arikara and their historic neighbors on the Upper Missouri were not noted for outstanding accomplishment in woodworking, and this phase of their material culture is usually barely mentioned, if at all, by the travelers and traders who passed through the locality. This, plus the fact that the present materials were all collected from open and unprotected sites, makes it rather surprising that anything as impermanent as wood should have survived the passage of a century and a half, or more.

Bowl.—This specimen, found inverted in the burial of a male in Grave 13, Cemetery 4, includes considerably less than half of the original vessel. Though somewhat warped, it is obviously from a flat-bottomed bowl with upcurving sides and a thin rounded lip. The flat base seems to have been about 6.5 to 7 cm. in diameter, whence the walls rose upward and outward to a height of perhaps 3.5 cm. to form a bowl with a rim diameter of about 12 to 13 cm. The entire vessel has been scraped or sanded to a fairly smooth finish, with a thickness ranging from 2 or 3 mm. at the bottom and 5 mm. on the sides to about 8 mm. where the base and sides join. There are no traces of efforts at ornamentation. The wood, very soft and light, may be poplar (USNM 325576).

Spoons.—The field notes record the finding of wooden spoons or ladles in Graves 13 and 16, Cemetery 4; but these cannot be certainly identified in the fragmentary material now in the national collections. There are several thinned and shaped pieces exhibiting a rather pronounced curvature, which may well be from spoons; but it is quite impossible to determine their original size and form.

Club.—This most interesting and unusual piece (USNM 325592) was found with the burial of an adolescent in Grave 8, Cemetery 4 (pl. 65, *a*). It is made of juniper and measures 75 by 7.2 by 3.2 cm. From a narrow grip, 2.7 by 2 cm., it expands upward into a broad blade, diamond-shaped in cross section and terminating in a short point. Below the grip, there is a slight subtriangular expansion pierced to receive a thong or cord which, inferentially, passed around the wrist of the user. There is no ornamentation; and traces of red paint along one edge may have resulted merely from contact with the pigments which also occurred in the grave.

I have been unable to find any description of clubs or clublike implements comparable to this piece from the Arikara or their neighbors, although a vaguely similar specimen in the ethnological collections of the National Museum is credited to the Oto of Nebraska. The Mobridge club seems rather light for service as a weapon of war or the chase, but it is very probable that when in use it was appreciably heavier and tougher than at present. It would certainly have been a far less effective weapon than the familiar stone-headed club of the historic Plains Indians, whose presence among the Arikara is indicated by at least one grooved stone club head in the present collection. Moreover, its association with an adolescent burial hardly seems in keeping with the idea that it was a man's weapon, although this is not conclusive evidence, to be sure. Whether implements of this type were used for such operations as fish killing or for dispatching or stunning other small game, I cannot say; but this would seem a more likely view than that regarding the club as a war weapon.

Carved sticks.—This is a varied lot of small wooden objects, mostly fragmentary, but certainly worked, that doubtless served a variety of uses among their owners. It would be most interesting to know just how they were used, but I cannot venture even a satisfying guess on this point. Most of them are certainly from graves, but it is impossible in most cases to identify the cataloged objects with those inventoried from various burials.

A dressed stick measuring 11.3 by 2.3 by 0.7 cm. is slightly curved lengthwise, with one end rounded and the other broken. There is some suggestion of a hole, or perhaps two of them, at and near the rounded end. Red ochre adheres to the object, but I cannot say whether this represents the vestiges of a former coating of paint or was acquired incidentally from paint materials buried with the stick in the grave. This specimen may be the "rectangular piece of wood about 6 inches by 1 inch, perforated at each end," recorded in the notes for Grave 13, Cemetery 4. It is of poplar.

The cut end of a carefully dressed stick is apparently all that remains of an interesting piece inventoried from Grave 13, Cemetery 4. This fragment, 35 mm. wide by 8 mm. in maximum thickness, has a concave-convex cross section; the concave surface is criss-crossed with fine incised lines spaced at intervals of 3 to 5 mm. In the field notes, what is evidently this specimen is described briefly as "a rectangular piece of wood ten inches long by one inch in width, concave on one surface and ornamented with closely drawn cross-hatched lines." There are traces of red ochre on all surfaces of the surviving fragment.

Of the "cigar-shaped" sticks reported from several burials, there are only two examples at hand. One, broken but restorable, measures 21.5 cm. long by 2.7 cm. in maximum diameter; it is approximately circular in cross section and tapers toward each end. Part of another broken specimen shows the same tapered form at one end. On neither of these is there any evidence of a dressed surface; in appearance, they suggest rather pieces of stream-worn driftwood which from long burial in the ground have acquired the partially rotted surface that characterizes the lower end of an old fence post. The fact that such objects are described in the field notes from at least five burials—one in Cemetery 3, four in Cemetery 4—would indicate that regardless of whether they were shaped fortuitously or purposefully, they served some definite need of the Indians.

There is apparently no trace in the cataloged collections of several other wooden objects mentioned in the field notes. These include: "a flat piece of wood 3 inches in length by ½ inch wide, wrapped with porcupine quills," from Grave 1, Cemetery 4; a "disc-shaped wooden object 2 inches in diameter, perforated in the center," from the same burial; and several "gaming sticks" reported from Grave 38, Cemetery 2, and Grave 11, Cemetery 4.

Copper-wrapped(?) *sticks.*—According to the field notes for Grave 18, Cemetery 2, in which was found the burial of an adolescent, "there were along the right arm seventeen strips of bark, each about three inches in length and one-quarter inch wide, wrapped in porcupine quill." These are in all probability the group of seventeen or eighteen specimens bearing the permanent catalog number 325538, and recorded only as "found with burial." None of these is now quill-wrapped (pl. 64, *e*).

Seventeen of the specimens are carefully shaped thin slips of soft wood or bark, 8.8 to 9 cm. in length, 8 to 11 mm. in width, and about 2 mm. thick. The ends are squared, with the corners and edges rounded off and worn smooth. All are more or less curved, probably by warping; in transverse cross section, one surface is very slightly concave, the other correspondingly convex. On the convex surface, close inspection reveals a succession of very fine, closely spaced transverse striations, more or less regularly spaced at intervals of 1 to 1.5 mm.; and these striae sometimes run over the edges but not onto the concave back.

None of the above pieces bear any traces of the quill wrappings attributed to them in the field notes. In the same lot with them, however, there is a small slightly tapered piece of wood or bark, 5 to 7 mm. wide, and slightly curved lengthwise. Part of its surface bears faint transverse striations that are indistinguishable from those on the above-described objects. Elsewhere, however, on *both* surfaces, there are small areas that are covered with closely laid copper or brass strips averaging 10 to 11 per linear cm. In no case do these strips pass completely around the piece, so that I cannot be sure whether a single long narrow flat wire of this material was wrapped continuously around the stick or, alternatively, whether shorter lengths were clamped around it and their ends fastened together somehow on the back. In any case, it is obvious that the wrapping here was of metal, not quills; and it seems very likely that the 17 objects described above were wrapped with the same material. I doubt that quill wrappings, even if they were applied wet and allowed to shrink tight, would leave the regular striations that evidently resulted from the hard, sharp edges of the metal strips. It must be admitted here that not one of the 17 objects first described above shows any traces of the green copper salts that might be expected if the above view as to their manner of use is correct; but it should also be pointed out that the greater part of the surfaces of the partially wrapped fragment are free from such evidence, too.

As to the use made of these curious pieces, I have little to suggest. They are somewhat reminiscent in size and shape of the quill-wrapped leather or rawhide strips used in various ways by the Indians, as in fringes on the lower edges of tobacco pouches. There is nothing to indicate, however, that they were intended for attachment, that is, they are unnotched and unperforated. I would suppose that they were perhaps manufactured by white men for the Indian trade, but this I cannot prove.

VEGETAL REMAINS

These include various seeds and other materials, both domesticates and nondomesticates, found in small quantities in several graves. Some are without doubt the remains of foodstuffs. Others are of nonedible nature, and may represent medicinal or other nondietary items. Needless to say, the list of plant materials found in these investigations must represent only a small fraction of the ethnobotanical resources available to, and doubtless utilized by, the local Indian populace.

Domesticated food plants are represented by several charred corncobs, all of them fragmentary, and by a few small lots of pumpkin or squash seeds (*Cucurbita* sp.). So far as I can determine, all cob fragments are from ears with eight rows of kernels. They range in maximum diameter from 12 to 15 mm.; none exceeds 38 mm. in length. Species identification of the *Cucurbita* seeds has not been attempted.

Nondomesticated plant remains include: Plum pits, probably *Prunus americana* Marsh, whose fruit, fresh, cooked, or dried, was widely used by many Plains Indian tribes (Gilmore, 1919, p. 87); chokecherry pits, probably *Prunus virginiana* L., whose small but delicious fruits, fresh or dried, were "highly esteemed by all the tribes for food" (Gilmore, 1919, p. 88); fruits of a ragweed, probably giant ragweed, *Ambrosia trifida* L., which may have been used as a curative; probable sumac fruits, *Rhus glabra* L., which are known to have been used for medicinal purposes by the Omaha and Pawnee (Gilmore, 1919, p. 99).

Several chunks of material from graves, which I presume to be the substance tentatively identified in the field as tobacco, show "no plant structure, . . . [and are] apparently not tobacco."

The field notes also mention "a quantity of funguslike material, probably tinder," which occurred with a male burial in Grave 1, Cemetery 4. Samples of this soft, powdery, brown substance (USNM 325518) have been identified in the laboratory as "Fungus, perhaps a puffball." According to Gilmore (1919, p. 62), these mushrooms were used by the Pawnee, Omaha, Ponca, and Dakota as a styptic; in the young stage, they were sometimes roasted and eaten by the Omaha.

A small tightly packed bundle of unidentified grass, wrapped with three or four turns of willow bark (USNM 325575), was found back of the skull of a child in Grave 3, Cemetery 3. Its purpose, if other than to cushion the head, is conjectural.

OBJECTS OF EUROPEAN MANUFACTURE

TEXTILES

Lace-ornamented garment.—The field notes describing an infant burial in Grave 11, Cemetery 4, state that "The head rested on a pouch of blue flannel decorated with green and white porcupine quills and brass buttons." The only cataloged materials that can be considered accordant with this brief description are several fragments of what was without much question a wool shirt or jacket, probably of machine-made cloth with nap, and decorated with imitation gold lace and gilt buttons. The exact nature of the original garment must remain uncertain; but it was apparently provided with lace-ornamented cuffs and was presumably open part way down the front. There is no indication of a collar. In part, at least, the garment consisted of two layers of napped plain or cotton weave (over-and-under) cloth; the sleeves and fragments of what was apparently the front consist of an inner layer of dark-blue cloth, over which was a layer of the same goods in a brown color. The thread with which these two layers were sewn together is cotton. There are several pieces of blue cloth only; but I cannot say whether these originally were the back of the shirt, perhaps made to contrast with the brown front or, alternatively, merely represent fragments that have become detached from the brown outer layer.

The lace with which this garment was decorated is of interest (pls. 66, 67). Done in narrow fabric weaving with an average width of 26 to 27 mm. it consists of flat metal strips averaging less than 1 mm. each in width and alternating with fine wire. These strips and wire constitute the weft; the warp is of cotton threads, alternating in wide (4 to 5 mm.) and narrow (1 to 1.5 mm.) elements, with two narrow elements used together at each edge. On the face of the resulting fabric, the metal strips are most conspicuous, the wires with which they alternate appearing only inconspicuously as they cross the narrow warp elements. On the back, of course, the opposite is true; the fine wires and cotton warps are most prominent (pl. 67, *a*, *b*). In passing, it may be noted that the lace, which may originally have been lightly gilded, now superficially resembles "green and white porcupine quillwork"; but careful examination leaves no doubt as to its true nature. M. L. Peterson, acting head curator, Department of History, U. S. National Museum, informs me that this is not military lace, of which it may be an imitation intended for the Indian trade; and that it was doubtless manufactured in Europe by hand.

There are interesting indications as to how the lace was used (pl. 66). A strip bordered each side of the half-opening down the front. At their upper end, these strips were folded so as to run at right angles, apparently along the shoulder. Other long strips no longer fastened to cloth suggest that the lace once ran down the sleeves. Two heavy pieces of brown cloth lined with dark blue, which are almost certainly cuffs, are each encircled by a strip of lace at the upper edge; and from this strip three shorter lengths run to the edge of the cuff opening (pl. 66, *b*, *c*). There can be no doubt about the cuff decoration and that along the opening of the shirt front, since these parts can be identified beyond any reasonable doubt. The suggested sleeve decoration is conjectural; but it would account for the remaining strips of lace and would also be in line with what is known about quillwork and beadwork decoration on historic Plains Indian costume.

In addition to the lace, there were a number of metal buttons on the garment. Five are still in place, attached at intervals along the front opening beside the lace fringe; an equal number are now detached from the cloth. They are apparently of brass with a light coating of gilt, traces of which still remain in a few instances. All are of single piece construction, 20 to 21 mm. in diameter, with a wire loop soldered to the back. On the reverse of each of the five free buttons, two concentric lines encircle the attachment loop. Between these lines are stamped the words CHANCE and GILT. While the buttons here involved are probably not military articles, it is of interest to note that a list of firm names and trademarks of military button makers (Johnson, 1948, vol. 1, p. 216) includes the entry "CHANCE, 1814." It is possible that nonmilitary buttons were also made by this manufacturer, or even that his name was used for promotional purposes by other manufacturers with a lesser reputation. The date given for Chance, of course, coincides very nicely with the period of known Arikara occupation of the site where the present specimens were recovered.

Metallic lace or "braid" that must have been very similar to that described on the fragmentary garment discussed above was evidently widely distributed among the western Indians during the eighteenth and early nineteenth centuries. In a list of presents for the Missouri River Indians drawn up by Cruzat in November 1787, at St. Louis, there are included "Nine garments trimmed with lace for the chiefs" and also "two lace-trimmed hats for idem" (Houck, 1909, vol. 1, p. 267). It is mentioned by Tabeau, circa 1803–5, in his description of the "ceremony for assuaging grief," which he witnessed among the Brule Sioux, and of which he wrote in part: ". . . The clothes of both men and women are scarlet; the coats of the men are decorated in false gold, with a blue collar ornamented with silver; and the garments of the women are trimmed in the same way . . ." (Abel, 1939, p. 212). On his visit to the Pawnee in 1835, Colonel Dodge was met by the son of the principal chief, who was wearing "a scarlet-colored coat, trimmed with silver lace . . ." (Dodge, 1861, p. 133).

Archeologically, metal wire and cotton lace of somewhat different construction from the Leavenworth Site example but superficially similar in appearance (USNM 381693), was recovered by the writer in 1938 in the vicinity of plow-disturbed graves at the Kansa village site 2 miles east of Manhattan, Kans. This site was the main village of the Kansa from circa 1800–1830 (Wedel, 1946, p. 13). In the metal lace from this site, paired brass or copper wires served as weft elements on a cotton warp; and the "copper cloth braid" found by Strong in a burial at the Leavenworth Site (p. 102) appears to be similarly made with fine wire wefts. Except in the garment described above, I have seen no archeological examples of braid or lace in which metal strips were used. The relatively fragile nature of the lace itself, together with the perishable materials to which it was attached, probably accounts in large measure for the infrequency with which it has been found archeologically.

Woolen fabrics.—These include several fragments of a soft light reddish-brown cloth, and one piece of a coarse weaving of a nearly black color. At first thought to represent bison-hair weaving, the specimens have been finally identified as of sheep's wool and thus they are evidently of trade origin. The yarns employed were apparently twisted by hand, and the finished fabrics show considerable unevenness in weave. There is no way of determining the nature or size of the finished articles of which these samples are obviously only remnants.

The softer material is woven from a single strand yarn, light brown in color and rather loosely and unevenly spun. The individual yarns, viewed end on, are twisted in a clockwise direction. The cloth woven from these yarns is a rather loose 45° twill, in which warps and wefts alike average seven or eight per linear centimeter. Over much of the surface the woven elements are partially obscured by what appears to be a soft nap, now matted down in places. There are no finished edges or ends on any of the pieces, nor is there evidence of ornamentation. The largest piece at hand measures about 18 by 11 cm.

The heavier cloth is made of two-ply cordage, and is very much stiffer and coarser than the foregoing. Each of the two strands making up the cords, when viewed from the end, shows a counterclockwise twist; and in combining the two elements into the larger cord, the twisting was in the opposite direction, that is, clockwise. The twisting, at least in the final operation, was evidently much more tightly done than in the lighter textile described above. The cords used in the weaving averaged from 2 to 3 mm. in diameter; they were worked into a tight hard over-two-under-two, or twilled, fabric in which there are about four cords per linear centimeter. So far as I can determine, there are no finished edges in this piece.

Cloth tape.—The only other textile fragment certainly recognizable as of white origin is a small length of woven tape, 25 mm. wide. White cotton and brown wool were used as warps, brown wool as wefts. In the finished piece, the ground is a rather loose brown twill (over-two-under-two) broken by four narrow strips of basket weave (over-two-under-two) in which the white cotton warps are most prominent. There is no way of determining from which grave this piece came, or how it was utilized by the Indians.

GLASS AND EARTHENWARE

Glass beads.—Glass beads of various sizes, colors, and shapes were taken from graves in all four cemeteries. With the exception of the small blue and white necklace beads, none of the varieties occurred in any great numbers. Unfortunately, the specimens recovered were not segregated according to provenience, either by grave lots or by site; and, except in a very few instances, it is not now possible to identify the beads in hand with those listed in the field notes as accompanying any given burial.

Most common in the collection are the small blue and white "seed" beads of size 0 or larger.[15] They average 3 to 5 mm. in diameter and run, when strung, about 10 or 12 to the inch. In shape and size they are quite variable, and many have the perforation off-center. The white beads (USNM 325454) are all opaque; the blue (USNM

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[15] Here I must acknowledge again my indebtedness to Glenn A. Black, Indiana University, for his courtesy and helpfulness in examining the beads from the Mobridge locality. The entire series was sent to Black without any data whatsoever regarding their provenience and without suggestion as to their time or cultural associations. Not until the beads were returned by Black to the U. S. National Museum, along with his report, dated March 7, 1951, did I inform him as to the source of the material. His general comment on the material follows: "With some exceptions, these beads are of types which were handled by both the French and the British as trade items in the period around 1750. There are some beads which were popular in the period 1700-1750 which are lacking from this group, which makes me feel that, generally, the period represented is from 1750 to 1800."

325463) are predominantly pale in color, and more or less translucent, with an occasional clear or dark-blue specimen. The field notes indicate that the small blue and white beads frequently occurred together; but in the collections at hand, there are only about 700 small whites as against nearly 6,000 small blues.[16] The latter are strung in 17 lots of somewhat varied size, but all bear the same catalog number.

Two strings of larger blue beads also include several kinds. On one (USNM 325456) there are four hexagonal faceted pale-blue opaque beads about 7 mm. in diameter and the same in length; four hexagonal and polygonal faceted dark-blue translucent beads, with length and diameter varying from 6 to 8 mm.; 32 irregularly shaped and variously sized deep-blue translucent beads 6 to 8 mm. in diameter; 27 uniformly shaped and sized pale-blue opaque beads, 5 to 7 mm. in diameter; and two green beads similar to the immediately preceding group.

The second string (USNM 325461) includes 61 opaque light-blue subglobular to subcylindrical beads, all under 8 mm. in length; and two ellipsoidal beads of the same general appearance, but ranging in length from 13 to 15 mm. and in diameter from 10 to 12 mm. (pl. 68, *c*). Many of these are surface-pitted with what are evidently air bubbles or other structural defects; and 8 or 10 of them have a dull-gray look that suggests burning. This string has been figured by Stirling (1947, fig. 2, *h*) as an example of native Arikara glassworking.

I confess to some perplexity regarding this last string of beads. Under the binocular microscope, the dull-gray specimens are seen to be imperfectly shaped, with large air bubbles, and the perforation wall is often nubbly. It gives the impression of poorly fused angular particles, some of which indeed have a strong reddish color. They look very much like an amateurish attempt at glassworking.

In contrast, the bright-blue specimens that predominate on the string, though they have a somewhat bubbly look, are vitreous in cross section, lack the large air bubbles, and have a smooth-finished perforation wall. Moreover, they are generally more symmetrical than the "burned" specimens just described, and look like the products of a competent and experienced craftsman. I am inclined to suspect that the inferior beads with the burned look may indeed be native-made; but the better-made and more numerous specimens would seem to me to have been beyond the capabilities of the Arikara glassworkers.

Several other strings or lots of miscellaneous glass beads are cataloged. One of these (USNM 325457) is cataloged as "from grave" and may include specimens from Graves 16 and 18, Cemetery 4. In this string there are eight translucent bright-red beads, with thin white lining(?) in the perforation; they are globular in shape, with diameter and length both averaging 6 mm. There are three multifaceted beads, including one short wide specimen of clear colorless glass, 9 mm. in diameter; a clear blue bead 5 mm. in diameter; and a long milky white specimen 18 mm. long by 7 mm. Other specimens in this lot include: a large short globular bright blue bead with wavy black and white lines; two white opaque barrel-shaped beads, 7 by 11 mm., with wavy bluish lines; three thick pear-shaped beads, with wide dull brownish stripes; a slightly smaller, similarly shaped specimen, encircled by a brown stripe flanked with pale blue-green stripes; a dark-brown tubular bead, 5 by 9 mm., with a wavy yellow fillet encircling each end; and two small barrel-shaped opaque greenish beads.

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[16] Tabeau, Maximilian, and other contemporary observers uniformly aver that blue beads were preferred above all other colors by the Upper Missouri tribes.

Another miscellaneous lot includes, besides fragments of types already noted above, a large multifaceted clear glass bead, barrel-shaped, and measuring 12 by 23 mm. (from Grave 6, Cemetery 4); and a smaller multifaceted specimen of opaque bluish-green glass, 12 mm. long.

There are two strings of medium-sized oblong glass beads, mostly white, that may include some or all of those listed in the field notes as "many large porcelain beads, of many different sorts." On the string of larger beads (USNM 325460), of which a sample is shown in plate 68, *d*, there are several beads that carry fine blue lines, usually in groups of two or three and sometimes spirally arranged. Highly variable in size and proportions, these beads range in length from 6 to 13 mm., and in diameter from 6 to 10 mm. The second string (USNM 325464) consists of smaller varisized white beads, generally of a wheat-grain form with flattened ends, and apparently of wire-wound manufacture. They range in size from 3 by 5 mm. to 7 by 13 mm. The 145 "porcelain" beads reported by Strong from a child burial at Cemetery 2 (p. 95) are all opaque white, without decorative lines or other markings, and resemble those in the first of these two strings.

Largest beads in the present collection are 13 ellipsoidal specimens (pl. 68, *e*), cataloged (USNM 325459) as "stone beads" but identified in the field records as of native manufacture (see also Stirling, 1947, p. 260 and fig. 2, *g*). Six are a dull opaque white; seven are pale blue, which in several examples appears to be weathered and faded. They vary somewhat in length from 25 to 31 mm., and in diameter from 12 to 18 mm.; the whites, as a group, are slightly larger. They have somewhat the shape of a pigeon egg, are generally well made and symmetrical, and have even well-centered perforations. The surfaces are somewhat pitted by air bubbles; but in general the beads all have a solid heavy appearance and feel. According to Black (letters of March 7 and 20, 1951):

> These are known as "wire-wound" beads due to the fact that the molten glass was gathered upon a revolving metal spindle. They are of an old type and have been found here on French site of the period 1690–1750. They continued later than that, however. . . . Duplicates are found in Indiana at the site of Miami Post, Wea Town, and in Michigan at the site of Fort St. Joseph. I have also seen them from several sites in the southeast. They were traded mainly by the French but the British used them also.

Interestingly enough, Catlin's portrait (No. 124) of the wife of an Arikara chief shows large beads of identical shape used as a necklace (Ewers, 1950, pl. 3); and on the original painting in the National Museum these beads clearly include both blue and white specimens, in alternating sequence. I think there can be no doubt that Catlin was depicting just the type of bead here discussed.

Native-made ornaments of glass.—Among the most interesting specimens in the present collection are 23 flatwork ornaments (USNM 325465) that can be accepted, without question, as examples of Arikara glassworking. All are blue or bluish white in color; and, except for a certain slight translucence at the edges, they are opaque. Two shapes are indicated (pl. 68, *a*, *b*). Seventeen examples are circular, with planoconvex cross section; they are from 20 to 22 mm. in diameter, up to 5 mm. thick, and have each a central perforation. The convex surface is usually blue, whereas the flat surface, or reverse side, has a dull grayish unfinished appearance. The upper surface tends to turn upward sharply just at the perforation, so as to form a slight ridge surrounding the latter. The only decorated specimen has two concentric rings of white inlay on the upper convex surface (Stirling, 1947, fig. 2, *c*).

Six specimens are subtriangular in outline, with rounded corners. In most particulars, they closely resemble the circular pieces, except that the surfaces seem to be more plentifully sprinkled with air bubbles, particularly on the flat back and along the edges. In size, they range from 33 by 27 mm. down to 20 by 16 mm., with a thickness between 5 and 7 mm. Four have inlaid decoration of two parallel whitish or brownish lines, between which are four or five dots of the same character (Stirling, 1947, fig. 2, *a*, *b*, *f*).

The available historical and ethnographic data on native glassworking by the Indians of the Upper Missouri region have been recently brought together and discussed in some detail by Stirling (1947, pp. 257–263), and there seems no point in repeating here the material thus made easily accessible. Briefly, the process involved the grinding up of ordinary trade beads, shaping or molding into desired form the resulting powdered and moistened glass, and then the proper firing of the materials. According to Tabeau (Abel, 1939, p. 139), "A Spanish prisoner taught them (the Arikara) how to melt our glass beads and to mould them into a shape that pleases them. This art which is as yet unknown to them is practised only secretly and still passes for a supernatural talent." This statement suggests that the trait was still a fairly new one among the Arikara in 1803, an impression that receives some support from the fact that in the present series native-made glass objects were recorded only from the latest of the burial sites represented, i. e., the Leavenworth Site.

That there is room for considerable diversity of opinion, even among professionals, in the matter of distinguishing trade beads from native-made glass ornaments is evident from what has been said in the foregoing pages. The specimens last described, of which Black observed that "they have me guessing," can hardly be anything else than native products. On the other hand, the large ellipsoidal wire-wound beads for which Black cites other occurrences at historic sites in the Indiana region, seem as certainly to have been erroneously identified previously as Indian glasswork. Finally, with regard to the string of blue beads (USNM 325461) earlier described herein, Black says on further inquiry that "they did not impress me evidently, for I made no notes relative to them." I have already indicated my doubts that this latter lot, with a few possible exceptions, can be attributed to Arikara glassworkers. In most respects, as Black implies, they evidently conform to recognized trade bead types; and it would seem to me a pointless effort on the part of the Indians to make, with their own primitive techniques, objects that could be obtained from the traders. The flattened triangular and circular forms, on the other hand, were quite unlike wares brought in by the Whites; and I am inclined to wonder whether most of the beads referred to in the early accounts of native glassworking were not actually more like the objects represented in our series by lot USNM 325465 than they were like the necklace beads included in USNM 325461.

Bottles.—From the burial of an adult male in Grave 10, Cemetery 4, was taken the small glass bottle shown in plate 68, *j* (USNM 325462). It measures 60 by 35 by 20 mm., and is complete except for a missing portion of the wide flange around the mouth. Its four sides bear the following inscription in raised letters:

LONDON

BY
THE
KINGS
ROYALL
PATENT
GRANTED
TO

Jany 16??

ROBT
TURLI
NGTON
FOR HIS
INVENTED
BALSOM
OF
LIFE

There is great uncertainty about the date, if such it is, in this inscription, since the numerals are much worn; otherwise, the characters are generally unmistakable. The nostrum indicated—Balsam of Life—was patented in London, January 18, 1744, by Robert Turlington, merchant of that city. There were 27 ingredients, constituting what was essentially a compound tincture of benzoin. It was said to cure the stone, gravel, colic, and inward weaknesses; the prescribed dosage was 30 to 40 drops. In 1752 the Boston Gazette advertised Turlington's "Balsam . . . prepared and sent by Mr. Turlington, the patentee, to John Vintenon . . . in Boston" (Kremers and Urdang, 1951, p. 201). It was advertised again in the same paper on January 21, 1765 (Dow, 1927, p. 236). How long and how widely it was used in the Indian and western frontier trade, I cannot say. The name "Turlington's Balsam" is included under "Compound Benzoin Tincture" in the United States Dispensatory (1947, 24th ed., p. 148).

The flat base of a small cylindrical bottle or vial (USNM 325468) was found with a female burial in Grave 1, Cemetery 4. It is of plain bluish-white glass, and has a diameter of 23 mm. (pl. 68, *h*). There are no marks on it.

Mirrors.—From Grave 1, Cemetery 4, came a wood-backed mirror (USNM 325467). It consists of a thin slightly iridescent glass rectangle measuring 53 by 90 mm., and a wood backing with a thickness of about 4 mm. The backing has a narrow slightly raised border about 5 mm. wide and of equal height, which presumably once held the glass in place. The flat area inside the border is stained dark, probably from the adhesive which once held the glass securely. At one corner there is a slight lateral projection, which may once have been part of a handle or some device for hanging the item. Owing to considerable shrinkage in the wood, the back no longer fits the glass found with it (pl. 65, *c*).

Numerous fragments of thin highly iridescent glass found in Grave 8, Cemetery 4, possibly represent a second mirror. There are traces of some sort of thin silvered(?) backing on one side of several glass slivers. Others show a finished curving edge that suggests some sort of object, mirror or other, substantially larger and of different shape than the mirror previously described. There are no wood or other remains suggesting a frame with this object (USNM 325466).

Earthenware.—Objects identified in the field as porcelain, but more accurately described as earthenware, were recovered from four graves, including two occurrences each in Cemeteries 2 and 4. None of the specimens listed in the field notes from Cemetery 2 have been identified in the cataloged collection, unless a string of opaque white glass beads (USNM 325460) is the material enumerated as "many large porcelain beads, of many different sorts."

From Cemetery 4 there are three earthenware objects. One is a curious tear-drop shaped object, part of the surface of which is still glazed (pl. 68, *g*; USNM 325534). It measures 12 mm. in diameter by 15 mm. in length; its purpose is unknown. From Grave 8 were taken two disks (pl. 68, *i*; USNM 325469), obviously reworked by the Indians from fragments of white glazed chinaware.[17] They are flat and somewhat irregularly shaped; in diameter, they measure 43 to 48 mm. and 50 to 55 mm., respectively. Neither is perforated and, except for the shaping, they have not been modified by the Indians. There is nothing to indicate how they were used.

In the collection there are two small fragments of white earthenware pipe stems (pl. 68, *f*; USNM 325504) whose provenience is uncertain. They measure 36 and 26 mm. long, respectively, and are 7 to 9 mm. in diameter. One end of the longer piece is worn smooth, suggesting utilization as a bead or ornament. There are no ornamental or other marks on either.

COPPER, BRASS, BRONZE

Objects made of copper or copper alloys constitute the greatest number of metal specimens from the Mobridge sites. All are heavily coated with the characteristic green or blue-green salts produced by corrosion. I have not thought it worth while to remove this coating except in a few instances where possible marker's marks or decorative patterns were indicated; nor have metallurgical analyses been made of the various pieces. There is nothing to suggest that any of the specimens consist of native copper; where native workmanship is suggested, this was confined to the cutting and limited shaping of scraps and small pieces.

Copper or copper alloy objects, or indications of their former presence, were found in graves at all burial grounds except Cemetery 3. The occurrences include 1 in Cemetery 1, 12 in Cemetery 2, and 10 in Cemetery 4. For the most part, the objects appear to be such as would have been used in personal adornment rather than as tools and implements.

Bracelets.—Bracelets of three different kinds are indicated. The first, represented exclusively from Cemetery 4, consist of heavy brass (?) wire or rod, 5 or 6 mm. in diameter, sometimes slightly flattened, and bent into an ellipse 73 to 80 mm. long with a gap of 20 to 25 mm. where the ends of the rod were not quite brought together. Deep transverse or diagonal scorings relieve the outside of the ellipse; they are irregular in length, depth, and spacing, and quite possibly were cut by the Indians themselves with a file or cold chisel.

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[17] C. M. Watkins, associate curator of ethnology, U. S National Museum, identified these disks as of English creamware.

In one or two instances, the ends of the rods look as if they had been partially cut with a chisel and then broken off by bending the rod back and forth. No two specimens of these bracelets (pl. 70, *g*) are exactly alike; and I would suppose that they may have been fashioned by the Indians from rods or heavy wire furnished by white traders.

Of quite different nature are several specimens made from coiled wire. A matched pair found together in Grave 13, Cemetery 4, consists of two coils, each of four turns of 5-mm. wire (pl. 70, *d*), with an over-all diameter of 85 mm. From Grave 22, Cemetery 4, came two smaller circlets of lighter coiled wire; each consists of about four turns, and the outside diameter of the coils is 51 mm. What I suspect may be the remains of another bracelet of this same style is represented by a mass of wire fragments, each averaging about 2 mm. in diameter, and with many curved, twisted, or doubled pieces. The four copper bracelets and a smaller coil found by Strong in a grave at the Leavenworth Site (p. 102) are of this same general sort; they consist of one to three turns of wire 3.5 to 6 mm. in diameter, forming more or less circular objects 47 to 67 mm. in diameter.

Of similar but simpler construction, and in a sense perhaps intermediate between the two types described above, are two specimens of uncertain provenience. A slightly flattened 3-mm. wire was doubled back on itself, and the two parallel wires were then bent into the form of an ellipse open at the back. They measure about 80 mm. in length, and the openings at the back are 15 to 20 mm. long. There is no scoring or other attempt at ornamentation (pl. 70, *i*).

A third and markedly different style of bracelet came from Grave 18, Cemetery 4. It consists of four springlike coils (pl. 69, *k*), each 16 mm. in diameter and 23 to 26 mm. long, made of 1.5-mm. wire. There is no indication as to the way in which these four units were held together on the wrist of the owner; they may have been on a light wire of which no trace now remains, or as likely were simply strung on a cord or thong. Ear ornaments that suggest similar metalwork are mentioned in Tabeau's description of a village dandy, who had "triple rolls of brass wire" in the ears (Abel, 1939, p. 177).

Bells.—These include three large and about a score of small specimens (pl. 69, *a*, *b*). The larger vary from 3.7 to 4.2 cm. in maximum diameter, are approximately globular in shape, and exhibit a raised rib about the middle where the two separately cast halves have been joined. Each has a heavy loop for attachment, from 10 to 15 mm. long and about as wide. Opposite the loop, a small circular area outlined by two incised lines is bisected by the slot. On one of the specimens, one of the semicircular spaces so formed has the letter W imprinted, while the opposite space bears the letter R. Between these half-circles and the equatorial ridge are eight contiguous lobed elements made with double lines so as to form a sort of loop closed at the top. The upper half of each bell is plain and undecorated, except for a 6-mm. hole on each side about halfway between loop and ridge. In each case, the slot is placed parallel to the axis of the loop, and terminates in a round hole at each end. The clapper is a small iron pellet.

The smaller bells are made of much lighter material. They are globular or slightly flattened, vary in diameter between 15 and 20 mm., and are provided with a light wire loop. The ends of the loop were passed through a hole in the bell, and the ends were then flattened out. Like the large bells, these were made in two parts, which were apparently fastened together by crimping the joined edges. The only decoration I have noted consists of two parallel incised lines encircling the lower, or slotted, half just below the point of union. The clappers consist of small iron pellets.

All of the bells here noted are apparently from burials. The large specimens are from a multiple interment in Grave 6, Cemetery 4, with which there were also four small bells. Additional bells, presumably of the small type, came from Grave 29, Cemetery 2; from Grave 5, Cemetery 4; and from Grave 12, Cemetery 2. A cluster of small bells is held together by an intricately knotted leather thong; they may represent some of those reported in the field notes for Grave 29, Cemetery 2, as part of a leather costume "profusely ornamented with copper beads and small copper bells." Accompanying them on the thong is a small brass or copper thimble, utilized evidently in the same manner as a bell. To hold this in place, the Indians drilled or punched a hole in the top of the thimble, inserted a thong, and then knotted the latter on the inside of the thimble.

Buttons.—There are 27 of these objects, apparently none of them of military character. They consist of a single solid disk or plate to the center of which a wire loop or shank has been soldered on one side. Two sizes are represented. The smaller examples, three in number, average 18 mm. in diameter. The front of the button is plain. Removal by means of acid of the patina from the reverse side of one discloses a narrow band of barely perceptible decoration surrounding the shank. At one point in this band, the word GILT is discernible; and there are very faint indications of another group of letters, including a T (from GILT?), in another part of the band. Nothing resembling a maker's mark is observable.

The larger buttons, 24 in number, average between 21 and 23 mm. in face diameter. Here again the exposed outer surface is always plain. Through the use of acid, it has been found that the reverse side is sometimes left plain also; at other times, it includes ornamentation. Commonest appears to be a button in which the shank is encircled with a 3-mm. band delineated by two lines of rouletting. Between these lines is a Greek fret interrupted at one point by the stamped word SUPERFINE and at another by the word STRONG. In another style, the button back is divided by stamped lines into two zones. The outer contains a floral design interrupted at the top by the word GILT; the inner includes a series of raised dots alternating with asterisklike figures and, at the top, has a motif that suggests three small conventionalized plumes. Again, there are no maker's marks or other identifying devices.

Most of the buttons now in the collection have been detached from their original fabric base, although many retain fragments of the thong by which they were once fastened in place. There is one incomplete band showing a series of 9 (originally 10) buttons still in their original position; it is described elsewhere in the section on native textiles and leatherwork. It suggests that buttons were perhaps more often used for strictly decorative purposes than for the more prosaic function of fasteners. I suppose that when the buttons were new and untarnished, their polished surfaces would have made them comparatively attractive to the Indians for such service. What I take to be metal buttons may be seen on garments, arranged in various ways, on several portraits in the Catlin collection.

Tinklers.—These are simple conical affairs made by rolling or bending a small piece of sheet copper into the form of a cone, with an opening left at the apex for insertion of a thong or cord (pl. 69, *j*). They vary in size from 15 by 6 mm. to 53 by 16 mm. Just how these were used is not clear in all cases, but they were almost certainly for ornamentation of clothing. Of the specimens here under consideration, a number of the larger ones—35 mm. or more in length—are attached to a leather garment in direct association with long copper or brass tubes. This item is described elsewhere in the section on native textiles and leatherwork. The smaller specimens are cataloged only as "from graves and refuse heaps, Elk Creek [Site 4]." They may have been used primarily on moccasins or legging fringes, whereas the larger were attached to shirts; but this is only a guess and may be wide of the mark. There are nearly 50 of these items in the present collection—a much larger series than is represented by the similarly made iron tinklers.

Tubes.—Amongst a miscellaneous series of metal objects and fragments cataloged as from "Elk Creek," there are about a dozen long straight tubes, made by rolling together the sides of rectangular strips of copper or brass (pl. 69, *h*, *i*). The resulting tubes are from 9 to 10.5 cm. long by 6 to 7 mm. in diameter; one or two specimens are as small as 53 by 5 mm. These could have been used in various ways as ornaments—around the neck, suspended from the ears or hair, or on garments. Only the last-named method is directly indicated in the present collection; and the one example, wherein the tubes were used in conjunction with tinklers on a leather garment, is described elsewhere in the section on leatherwork.

A 10.5-cm. tube of identical type was found by Strong with an adult burial at the Leavenworth Site (p. 102).

Fringe clips.—This designation, for want of a better, I have applied to numerous short tubular copper or brass objects made of small squares or rectangles bent tightly around leather fringe thongs. In general appearance, they suggest a string of beads, except that the position of each is fixed and unchanging. As they appear on the thongs, each is 8 to 10 mm. long, and is separated by 2 or 3 mm. from its immediate neighbors. Several thongs so decorated appear in the collection (pl. 69, *f*), reaching individual lengths of as much as 10 cm. They are cataloged (USNM 325472) as "from graves, Elk Creek"; but I have not been able to trace them down more precisely through the field notes. They presumably derive from a single grave, but whether from a garment, skin bag, or other similar object I cannot say.

Miscellaneous ornaments (?).—There are three rectangular sheets or strips, ranging from 70 by 13 mm. to 87 by 18 mm., with finished edges that have been doubled over and hammered down. They are sufficiently uniform in size, shape, and other particulars to be almost certainly intended for the same purpose. They somewhat suggest blanks from which the long tubes for garment decoration or personal adornment might have been fashioned (pl. 70, *e*).

A number of variously shaped pieces remain unidentified as to function. The rectangular piece shown in plate 71, *d*, measuring 80 by 120 mm., appears to have been originally one sheet, with its long sides finished and the ends turned back somewhat and irregularly broken off. Five neatly punched holes, one in the center and one in each corner, average from 10 to 12 mm. in diameter. There is no decoration. Two rectangular sheets that look like one divided piece (pl. 71, *e*) have each three finished and one broken edge with one or two perforations near the longer finished edge; each piece approximates 45 by 78 mm. There is also an elliptical sheet, 42 by 120 mm., with two square and four circular perforations, two of the latter being on opposite edges near the rounded end; the opposite end is slightly constricted and broken. This may be the "oval copper breast ornament about 3 by 1½ inches" recorded in the field notes as from Grave 6, Cemetery 4. Two pieces, both fragmentary, each have several square or nearly square perforations. What is very likely a finger ring, was made by simply bending a narrow irregular metal strip 8 mm. wide by 48 mm. long into a rude circle whose ends are not quite closed. The small winged and pierced object in plate 62, *k*, may have been an ear ornament.

Knife blades(?).—There are seven or eight long narrow strips up to 15 mm. wide and 75 to 80 mm. long, which apparently represent some of the copper knives reported in the field notes as from one or another of six graves, all in Cemetery 2. None shows any evidence of the former presence of a tang or of rivet holes; but such traces would not be likely to occur in the case of blades set into the edge of a slotted bone, as in the native-made knives described in a preceding section (p. 122). Two of the present specimens have each one very finely serrate edge.

Hinge.—From the burial of a female in Grave 22, Cemetery 2, came the wing-shaped brass hinge shown in plate 70, *f*. When found, according to the field notes, it lay beside the skeleton and was "mounted on a stick and ornamented with feathers and tufts of hair." Of these latter items, there is now no trace.

IRON

Objects of iron were not very plentiful, but this may well reflect the fact that by far the largest part of the collection was taken from burials rather than from refuse deposits, habitation units, or other village site features. The field notes indicate that iron occurred in 2 graves in Cemetery 2 and in 13 graves in Cemetery 4. The largest piece found was a horseshoe, which incidentally seems to be the only piece of horse gear that came to light. Otherwise, the collection includes various small ornaments, cutlery, and other trinkets, most of which could have been acquired either as good-will gifts from passing travelers or through established intercourse with white traders. There are no recognizable parts of steel traps, guns, hoes, axes, or culinary vessels among the iron present. All pieces are heavily oxidized, so that identifying marks are no longer visible.

Arrowpoints.—Four iron arrowpoints (USNM 325520) listed without provenience other than "Vicinity of Mobridge," possibly include three specimens from two graves in Cemetery 4. Three have plain triangular blades and narrow straight-sided stems; their over-all length does not exceed 50 mm. The fourth is a larger side-notched form in which the blade measures 23 by 63 mm., and which has a small tapering stem 6 mm. long. A much larger fragment is unidentifiable, but somewhat suggests the stem and upper blade of a large arrowpoint or spearhead.

Knives and blades.—Iron-bladed knives include two specimens. One (USNM 325478) of these consists of a short heavy triangular blade, 48 mm. long by 25 mm. wide, attached to a 60 mm. shank set deeply into a split wooden handle and secured by three iron rivets. There is some evidence that the slot in the handle was sawed out; it does not fit the shank of the blade very snugly, as might be expected in a commercial product. It is quite possible the piece is the product of an Indian craftsman, or perhaps a reworked trade article (pl. 61, *f*).

The second piece consists of a metal strip set lengthwise into the edge of a slotted rib, which is without doubt of native manufacture. It has been described in the section on bonework (p. 122; pl. 61, *g*).

Scrapers of iron are inventoried from three graves, all in Cemetery 4; but there is only one specimen in the collection at hand that would seem to represent one of these. Oblong in outline, it appears to have been originally more or less semicircular; the straight edge has been bent tightly around a wooden stick so as to leave a curved cutting or scraping edge.

Spikes.—Three fragments are evidently parts of spikes (USNM 325521). One is pretty certainly square, as is its head; it measures 11 cm. long (pl. 69, *c*). Two shorter pieces, each with a round head, average 5 cm. I would judge that these were all grave finds from Cemetery 4.

Razor.—From a male burial in Grave 10, Cemetery 4, came the blade and tang of a straightedge razor (USNM 325479), 13 cm. in over-all length. This has a curiously modern appearance. The blade appears to have been of fairly heavy construction, but oxidation has so altered it that I am unable to determine whether the cross section was originally wedge-shaped or hollow ground. A rather marked shoulder or offset on the under side, separating the blade from the thumb rest, suggests a manufacturing date after circa 1800. The narrow rounded end of the tang and its shortness, also seem to indicate a relatively late period (Lummus, 1922, p. 263). The handle has disappeared entirely, though the rivet with which the instrument was originally held together remains. Unless future examination by someone more thoroughly versed in the history of the razor than I am establishes the identity and actual date of manufacture of this piece as after the midnineteenth century, it is likely that the object represents a European-made product (pl. 70, *a*).

Horseshoe.—The horseshoe (USNM 325473) already alluded to above was found with an infant burial in Grave 5, Cemetery 4. It is 11.7 cm. long by 12 cm. wide, has one toe and two heel calks, and shows six nail holes. When these holes were punched out, the metal on the outer curve of the shoe was bowed outward, producing a sort of scalloped effect. The calks are rather prominent; but, like the edges of the shoe on the under side, do not seem to show very much wear. Since Indian horses were not customarily shod, it may be suggested that this object was perhaps on a Spanish animal acquired through trade or theft by the Indians. It is even possible, I suppose, that the shoe could have traveled alone as a trade item, and never served among the Indians the purpose for which it was originally manufactured.

Fire steel.—There is but a single example (USNM 325521), and that of very simple type (pl. 70, *c*). In outline, it approximates a closed ellipse measuring 87 by 37 mm., outside dimensions. The metal of which it is made varies slightly between 8 and 9 mm. in width, and is approximately 2 mm. thick. Owing to the pitting resulting from oxidation, it is impossible to determine whether the striking edge was nicked by usage, or whether the piece bore any markings of possible significance.

Awls.—The only occurrence of metal objects that might have been awls was in connection with antler handles, which have already been noted in the section on work in antler (p. 132). Here again oxidation has progressed so far that definite identification of the original shape of the ferrous material is not possible (pl. 61, *e*).

Ornaments.—Iron objects presumably used for personal adornment include bracelets, conical beads or bangles, and small rings. In the present collection, four bracelets (USNM 325521) are made of heavy strap iron bent into an elliptical shape to fit the wrist, with the ends not quite meeting at the back. They measure uniformly from 70 to 75 mm. in length by 45 to 50 mm. in width; and the opening through which the wrist was inserted is from 25 to 30 mm. wide. The straps from which they were fashioned range in width from 10 to 25 mm. and in thickness from 2 to 3.5 mm., except at the ends which were hammered out. Several other fragments seem to be from a fifth specimen of comparable size and form. All of these, presumably, are from burials in Cemetery 2 (pl. 70, *b*).

The conical bangles or tinklers (USNM 325470 and 325471), which I presume are the beads mentioned in the field notes, are 16 in number. They resemble in all particulars, except material, the much more numerous brass specimens elsewhere described. They were made by twisting small sheets of iron into a conical shape, with the edges just overlapping, and with a small hole left at the apex for passage of a thong or cord. In size, they vary from 23 by 7 mm. to 38 by 12 mm. They were undoubtedly used, like the copper or brass cones, as bangles attached to thongs or fringe strips on garments or other articles (pl. 69, *e*). Twelve conical iron bangles of this sort were found by Strong with an adult burial at the Leavenworth Site (p. 102).

Five small iron rings were found, according to the field notes, with a male burial in Grave 23, Cemetery 2; they are not further described. Possibly they are represented by three heavily oxidized springlike coils of medium-weight wire. Each coil includes from three to six turns, with an outside diameter of 15 to 16 mm.; the wire appears to have had an average diameter of about 2 to 2.5 mm. As elsewhere noted, there are similar objects of copper or brass in the collection; and it may be suggested that both the iron and brass coils perhaps served as ear or hair ornaments.

WHITE METAL

Under the heading "White Metal" I include a series of badly decomposed metal objects inventoried in the field notes as silver. They include three double-barred crosses, two buttons, a number of fragments that probably represent a "crescentic breast ornament," a mutilated knife blade, and a short piece of wire or small rod. Under the binocular microscope, at 40 diameters, all look alike as far as material is concerned. Chemical analysis of scraps from the crosses yielded negative results in tests for silver; and further tests disclose a high proportion of tin, with some copper. All of the objects are in an advanced stage of erosion, with the original surfaces and any marks or ornamentation they once bore pretty completely destroyed.

Double-barred crosses.—None of the crosses is complete, but two are evidently a matched pair (USNM 325481–2) and give some idea as to their original form and proportions. Of the type known as the Patriarchal or Lorraine cross, they are round-based, with two slight lateral projections just above the base; the stem tapers toward the top, which is rounded and slightly expanded, with a hole for suspension; the crossbars, which are of equal length and breadth, have foliated or notched ends. These two specimens each measure 13.7 cm. in length, and the bars have a span of 7.5 cm. One still has a copper wire ring in the suspension hole at the top (pl. 71, *a*, *b*). Both are probably from Grave 13, Cemetery 4.

The third specimen is of much lighter material and was evidently considerably smaller than the foregoing. It is too badly disintegrated for reconstruction, although it appears certain that it also was double-barred.

The finding of three metal crosses with burials at the Leavenworth Site does not, of course, establish the presence of Christianity nor does it record a visit from, or contact with, Jesuit missionaries. It probably has no religious connotation whatsoever. During the latter half of the eighteenth century and the first third of the nineteenth, crosses were commonly carried by traders who sold them to the Indians of the interior for use as ornaments. Many of these objects were made of silver and were decorated in various ways, as were the arm bands, brooches, and other items that frequently accompanied them in the trader's pack. It is quite probable that the examples here under discussion, when first they passed into the hands of the Indians, were bright and well polished, and they may even have been passed on to the unsuspecting natives as silver articles. Their high tin content would probably have made them especially susceptible to oxidation and subsequent disintegration in the cold environment of the Dakotas.

In the archeological literature on the Great Plains and Upper Missouri I have been unable to find records of other finds of this character. Crosses that are apparently close to the Mobridge specimens in form, but made of silver and of less massive appearance, have been reported by Quimby from burial sites in Michigan, which he attributes to the period ca. 1780–1815 (Quimby, 1938). Somewhat less close is the resemblance to some of the silver pieces figured by Beauchamp from sites in New York State (Beauchamp, 1903, pl. 19). None of the trader's reports I have seen for this immediate region, or the lists of goods furnished them for the Missouri River Indian trade, seem to mention such items as crosses. It is possible they were brought in by a more northerly route than the usual documented one via the Missouri River from St. Louis.

Miscellaneous objects.—The remaining white-metal objects from Mobridge merit only brief notice. The two buttons, both badly pitted and fragmentary, are of the single plate circular type, with a wire loop soldered to the back; they were evidently about 20 mm. in diameter. The presumed "crescentic breast ornament" is represented by several bits and a somewhat concave irregular plate, with some indication of two slight ridges along one edge. All margins show fractures; the plate measures 13 by 4.5 cm. An elliptical piece, 42 by 27 mm., has been cut in two and a wedge-shaped sliver removed from one side of the bisecting cut. A rod of heavy wire, 3 mm. in diameter by 13 cm. long, has been doubled and redoubled back on itself; it probably is one of the finds recorded in the field notes as "silver wire."

The last piece is apparently a large knife blade, 21.5 by 3.1 cm., with a tang measuring 4 by 1.4 cm. and pierced with a rivet hole near its rounded extremity. The point and the tang have both been bent back tightly against the heaviest part of the blade, and are now broken at the creases. It is difficult to see what useful function such an implement could have served, since the metal of which it is made is much too soft to withstand the cutting or stabbing operations to which a knife of this size would normally be subjected (pl. 71, *c*).

MISCELLANEOUS TRADE ARTICLES

Silver pendants.—The only specimens that seem quite surely to be silver are two small ear ornaments (USNM 325487) found with a male burial in Grave 21, Cemetery 4. Each consists of a hollow spherical pellet, less than 5 mm. in diameter, which has been split for attachment to a wire loop. Opposite the closed split is a small wire loop from which is suspended, by means of another loop, a conical pendant, 10 mm. long by 3.5 mm. in maximum diameter and closed at the larger end. Though not identical in all particulars, the two were evidently used as a pair, and they may represent items made specifically for the Indian trade (pl. 62, *j*).

Hair pipes.—To this category I have assigned two interesting objects of shell that are almost certainly not of native manufacture. They are long, slender tubes with their maximum diameter at the middle, whence they taper evenly toward each flattened end. The better preserved of the two is 82 mm. long, and has a maximum diameter of 9 mm. The second example is very badly eroded and one end is missing, but the shape, size, and proportions permit its identification beyond reasonable doubt. It measures 68 by 7 mm.; its original length is conjectural. Each piece has a long straight cylindrical bore 1.5 mm. in diameter (pl. 63, *l*, *m*). Their provenience is uncertain, but I suspect they are the "two long cylindrical shell beads" from Grave 15, Cemetery 4.

Three additional hair pipes were found by Strong in a grave at the Leavenworth Site (p. 102). They are very similar, ranging in length from 66 to 74 mm.

Shell tubes of this type were widely used by the western Indians during the nineteenth century, commonly as ear or hair ornaments. They are clearly indicated in several of Catlin's portraits (see, for example, Nos. 23–26 (Kansa) and 176 (Plains Cree)). Archeologically, they have been reported (Wedel, 1936, p. 86) from the Hill Site (Pawnee, ca. 1800) in southern Nebraska; and there is a similar specimen, of uncertain provenience but probably from northeastern Kansas, in the Dinsmore collection at the University of Kansas Museum. I have been unable to find any published archeological records for the Arikara, Mandan, or their neighbors on the Missouri, though it would seem that they ought to be present in unpublished historic burial collections from the region. Their general absence from archeological collections representing the protohistoric and prehistoric periods in the Nebraska-Kansas region, or apparently elsewhere, for that matter, suggests that the type may not much predate the year 1800; and their general uniformity of size, form, and material wherever found is support for the belief that, despite some contrary opinions among local collectors and others, they were not made by the Indians but were acquired by them through trade with white men. For the probable source from which these hair pipes were originally distributed to the Indian trade, see Westervelt (1924); and a forthcoming study by J. C. Ewers, U. S. National Museum, in which the whole problem of hair pipes in the Indian trade is comprehensively discussed.

Gunflints.—Six of these objects are cataloged under a single number (USNM 325529), with their provenience given only as "Vicinity of Mobridge, S. D.". The field notes show that at least four flints were found with burials, all at Cemetery 4; and I suspect that these are included in the cataloged series, perhaps along with others from village-site investigations.

None of the flints are commercial items, although four of them were certainly fashioned by someone with a fair knowledge of what he was about. They are of pale-gray stone, quite unlike the high quality imported Brandon flints. The two smallest, measuring 20 by 16 by 6 mm. and 23 by 18 by 6 mm. are probably pistol flints. The larger ones, ranging up to 26 by 22 by 7 mm., are for either a military pistol or a sporting rifle; they are too small to have been used in a military musket. Two of these are quite roughly made, with all-over chipping, and may well have been fashioned by an Indian or other local artisan.

Other than these flints, it may be noted, there was no evidence of firearms in the present collection.

RÉSUMÉ

The archeological data set forth in the preceding pages are concerned primarily with findings at four native burial sites located within 8 miles of one another in the Missouri River Valley north of Mobridge, S. Dak. Despite the geographic propinquity of these four sites to one another, some rather obvious differences in culture content are manifested. These involve various aspects of the mortuary complex, including, for example, the inferred method of disposing of the dead, the amount and nature of the cultural objects accompanying them, and the quantity of material indicating contact with white men. These variations, it appears to me, may reflect gradual changes in the burial practices and concepts of the Indians throughout a time period of as yet undetermined duration, as well as the growing importance of native trade relations with Europeans. Unfortunately, the unusually extensive series of burial site materials is not paralleled by well-controlled and full data on the archeology of the respective nearby village sites, so that there are serious limitations on the cultural correlations and comparisons that can be made at this time.

Recapitulating briefly, we have noted that at Cemetery 1, 11 graves were opened, revealing two distinct modes of burial. These included primary interment, or flesh burial, and secondary interment, presumably following exposure of the corpse. All graves contained the remains of two or more individuals; in several graves clearly showing secondary burial, there were parts of as many as five to eight persons. Mortuary accompaniments were uniformly scarce; in the six burials where they did occur, they consisted of but one or a very few small simple articles. Materials possibly or certainly indicative of contact with white men were particularly uncommon; they included a few glass beads in one grave, and a stain suggestive of copper in another.

At Cemetery 2, 39 graves were opened; and of these, 31, just under 80 percent, each contained the remains of a single individual. The graves were dug pits, ranging in depth up to 5 or 6 feet. Characteristically, the skeletons were covered with logs, or with logs and brush; and sometimes field stones were included in the grave fill, especially in the soil over the head of the deceased. Skeletons were consistently in articulation, but arrangement and orientation of the bodies varied, as elsewhere noted. Artifacts were usually placed about the head, sometimes with additional objects scattered elsewhere about the skeleton. Pigments were usually present. In several graves were noted traces of what was presumed to have been leather garments, robes, or other perishable wrappings. Artifacts were much more plentiful here than in Cemetery 1, occurring in 31 of the 39 graves. They included work in pottery, stone, bone, shell, leather, wood, copper, iron, and glass. The burials of children and infants, though in the minority numerically, were often rather well furnished; with one were found two whole pottery vessels. Skeletal materials, on the whole, were well preserved. European trade goods were found in 13 of the 39 graves.

Cemetery 3 is represented by only six graves, which provide, of course, an entirely inadequate series for detailed or convincing comparisons. Graves here are described as "few in number and much scattered." As in Cemetery 2, single interment was here the rule, and the skeletons were consistently in articulation. Graves were shallow, and the fill usually included stones which sometimes were used also to cover the grave. Artifacts were found in all six graves but in no case were they abundant or of striking character. Contact materials, consisting in all cases of white glass beads, occurred in three of the six graves.

Cemetery 4, which on documentary grounds can be correlated with an Arikara occupation of circa 1803–32, yielded by far the largest and most varied collection of cultural materials. Burial methods were, in general, much like those at Cemeteries 2 and 3, with graves dug to various depths in a hard gravelly soil. Log, brush, or stone grave coverings are not mentioned in the field notes. Primary interment, usually of single individuals but occasionally of two or three, was the rule. Artifacts were present in all but one of the graves occurring sometimes in considerable variety and some quantity. They included objects of pottery, chipped and ground stone, bone, shell, leather, woven fabrics, wood, copper, iron, glass, brass, porcupine-quill work, native glass, and foodstuffs. From 20 of the 22 graves were taken items showing contact with white men.

In the following pages, I have summarized in tabular form the principal data available in Stirling's field notes regarding burials and burial associations at Cemeteries 1 to 4 (table 2). Cemetery designations and grave numbers used are those given by Stirling. Included in the tabulation are: field observations as to the number of individuals in each grave; the sex (of adults) or age category (I=infant, C=child, A=adolescent) of the individuals recognized; U. S. National Museum catalog numbers for the skeletal materials preserved from the respective graves; and a brief summary of the artifacts found in association with each burial. Further details concerning each grave and its contents have been presented in an earlier section on Sites and Burial Data (p. 86).

TABLE 2.—*Summary of data on burials and associated artifacts at Cemeteries 1 to 4, near Mobridge, S. Dak.*

[Abbreviations: I, infant; C, child; A, adolescent. Catalog numbers refer to specimens in Division of Physical Anthropology, U. S. National Museum.]

Site	Abbreviation or sex symbol	Catalog No.	Distribution of burials and associated artifacts																																							
			Vessels, pottery, whole	Potsherds	Pigments, red	Pigments, other	Spatulate objects, bone	Shaft straighteners, bone	Applicators, paint, bone	Whistles, bone	Phalanges, perforated	Bones and/or teeth, animal	Bones, bird	Tubes, bone	Antler objects	Projectile points, stone, chipped	Chipped stone, other	Pebbles and/or polishing stones	Spheroids, stone	Catlinite, worked	Chalcedony, worked	Gypsum, worked	Obsidian, worked	Beads, shell, *Olivella*	Beads, shell, dentalium	Shell objects, other	Leatherwork	Hair, tufted, braided, etc.	Wood, worked	Wood(?), metal-wrapped	Quill work, porcupine	Beads, glass	Glass, other	"Porcelain" (earthenware)	Glasswork, native	Copper, brass, bronze	Iron objects	"Silver" (white metal)	Hair pipes	Gunflints	Seeds	Vegetal items, other than seeds	Fossils, concretions, etc.
Cemetery No. 1:																																											
Grave 1	♂	325388	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	C	--------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	I	--------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Grave 2	♀	325398	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	♂	325434	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	♂	325435	---	---	+	---	---	---	---	---	---	---	---	---	---	---	---	---	2	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	♂	--------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	♂	--------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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	I	--------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	I	--------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Grave 3	♀	325394	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	I	325413	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	+	---	---	---	---	---	---	---	---	---	---	---
Grave 4	♀	325392	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	♀	325393	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Grave 5	♀	325432	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	♀	325423	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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	♀	325427	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	♀	325399	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	♀	325417	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Grave 6	---	--------	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Grave 7	♀	325400	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	A	325411	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

TABLE 2.—*Summary of data on burials and associated artifacts at Cemeteries 1 to 4, near Mobridge, S. Dak.*—Continued

[Abbreviations: I, infant; C, child; A, adolescent. Catalog numbers refer to specimens in Division of Physical Anthropology, U. S. National Museum.]

Site	Abbreviation or sex symbol	Catalog No.	Distribution of burials and associated artifacts																																								
			Vessels, pottery, whole	Potsherds	Pigments, red	Pigments, other	Spatulate objects, bone	Shaft straighteners, bone	Applicators, paint, bone	Whistles, bone	Phalanges, perforated	Bones and/or teeth, animal	Bones, bird	Tubes, bone	Antler objects	Projectile points, stone, chipped	Chipped stone, other	Pebbles and/or polishing stones	Spheroids, stone	Catlinite, worked	Chalcedony, worked	Gypsum, worked	Obsidian, worked	Beads, shell, *Olivella*	Beads, shell, dentalium	Shell objects, other	Leatherwork	Hair, tufted, braided, etc.	Wood, worked	Wood(?), metal-wrapped	Quill work, porcupine	Beads, glass	Glass, other	"Porcelain" (earthenware)	Glasswork, native	Copper, brass, bronze	Iron objects	"Silver" (white metal)	Hair pipes	Gunflints	Seeds	Vegetal items, other than seeds	Fossils, concretions, etc.
Cemetery No. 1—Continued																																											
Grave 8	♂	325395	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	?	---	---	---	---	---	---	---
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Grave 10	♂	325433	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	♂	325425	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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	♀	325415	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	C	325402	---	---	+	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Grave 11	♀	325389	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
	♂	325397	---	---	---	---	---	---	---	---	---	---	---	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	+	---
	♂	325418	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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Grave 3	C	325408	2	1	---	---	---	---	---	---	---	1	---	---	---	---	---	---	---	2	---	---	---	---	---	6	---	---	---	---	---	+	---	---	---	1	---	---	---	---	---	---	---
Grave 4	♀	325358	---	---	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	---	---	---	---	---	---	---	---	---	1	4	---	---	---	---	---	---
Grave 5	♀	325359	---	---	+	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

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Grave 5	♀	325337					1																									+											
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TABLE 2.—*Summary of data on burials and associated artifacts at Cemeteries 1 to 4, near Mobridge, S. Dak.*—Continued

[Abbreviations: I, infant; C, child; A, adolescent. Catalog numbers refer to specimens in Division of Physical Anthropology, U. S. National Museum.]

Site	Abbreviation or sex symbol	Catalog No.	Distribution of burials and associated artifacts																																							
			Vessels, pottery, whole	Potsherds	Pigments, red	Pigments, other	Spatulate objects, bone	Shaft straighteners, bone	Applicators, paint, bone	Whistles, bone	Phalanges, perforated	Bones and/or teeth, animal	Bones, bird	Tubes, bone	Antler objects	Projectile points, stone, chipped	Chipped stone, other	Pebbles and/or polishing stones	Spheroids, stone	Catlinite, worked	Chalcedony, worked	Gypsum, worked	Obsidian, worked	Beads, shell, *Olivella*	Beads, shell, dentalium	Shell objects, other	Leatherwork	Hair, tufted, braided, etc.	Wood, worked	Wood(?), metal-wrapped	Quill work, porcupine	Beads, glass	Glass, other	"Porcelain" (earthenware)	Glasswork, native	Copper, brass, bronze	Iron objects	"Silver" (white metal)	Hair pipes	Gunflints	Seeds	Vegetal items, other than seeds	Fossils, concretions, etc.
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Grave 3	♂	325341	---	---	---	---	---	---	---	---	---	1	---	---	---	---	---	---	---	---	1	---	---	---	---	1	---	---	---	---	---	+	---	---	---	---	---	1	---	---	---	---	---
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Grave 6	♀	325342	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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Grave 8	A	325344	---	---	+	---	---	---	---	---	---	+	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	2	---	---	+	1	2	---	---	1	---	---	---	---	---	---
Grave 9	♂	325345	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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Grave 13	♂	325348	1	---	+	+	---	---	2	---	---	9	1	---	1	---	---	---	3	1	---	---	---	---	---	2	+	---	5	---	---	+	---	---	?	+	+	4	---	---	+	---	---
Grave 14	A	325401	---	---	+	+	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	---	---	---	---	---	---	---	---	3	1	---	---	---	---	---	---
Grave 15	♂	325403	---	---	+	---	---	---	---	---	---	+	---	---	---	1	1	---	---	---	---	---	---	---	---	2	---	---	---	---	---	+	---	---	?	8	2	4	---	---	---	?	1
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Grave 17	♀	325351	---	---	+	---	---	---	4	1	---	---	---	---	1	---	---	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Grave 18	A	325407	---	1	+	+	---	---	---	---	---	---	---	---	---	---	---	1	1	---	---	---	---	---	---	---	2	---	1	---	+	+	---	---	?	+	1	---	---	---	---	---	---
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Grave 20	A	325405	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
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Grave 21	♂	325353	---	---	+	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	2	---	---	---	---	---
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Grave 22	♀	325354	---	---	+	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	---	---	---	---	+	---	---	?	2	---	---	---	---	---	---	---

TIME PERSPECTIVE

When we turn to the problem of chronological ordering of the materials discussed herein, several leads are apparent. Absolute dating is possible, at the moment, only in the case of the most recent burial site; but the chances are very good, I think, that relative dating can be successfully accomplished for all four. For one thing, all of the sites yielded, though in widely different amounts, certain objects indicating direct or indirect contacts with white men. This, of course, immediately suggests comparative recency for the great bulk of the remains. Moreover, the relative number of occurrences of such materials in terms of individual burials varies from site to site, as does their total amount per individual. This is in line with what would be expected in light of the historical evidence for the growing importance and intensity of white trade during, say, the seventeenth, eighteenth, and nineteenth centuries. Paralleling this increase in quantity of trade goods is an increase in the amount of perishable materials—leather, woven textiles, wood, etc. Since the four burial sites can be arranged in a logical series, based on the above considerations, and since that series culminates in a well-documented historic Indian community, there seems good reason to conclude that the sequence about to be suggested represents a correct interpretation.

Since all four of our burial sites yielded European contact materials, it is probable that the time span represented is not a long one. Direct trade relations between the Indians of the Upper Missouri and the French, English, and Spanish probably did not begin until the closing decades of the eighteenth century. Indirectly, however, through intertribal barter with native peoples residing farther to the east and northeast and thus closer to the advancing white frontier, trade goods were undoubtedly entering the Upper Missouri region in appreciable amounts long before, quite possibly by the middle of the century or even earlier. Bourgmond's observation in 1714 that the Arikara had seen the French raises the question whether, even during the latter part of the seventeenth century, some articles may not have been coming in from the upper Mississippi area.[18] If so, these were probably in such limited amount that the chances of their recovery by archeologists would be rather remote. My own guess would be that the great bulk of the contact materials resulting from

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[18] Duluth had been among the Sioux around Mille Lacs in present northern Minnesota as early as 1679 (Harrisse, 1872, p. 177). During the 1680's, Perrot extended his activities westward to the Mississippi, establishing Fort St. Nicholas and Fort St. Antoine on that stream, and in 1689 taking possession of the upper Mississippi country in the name of the King of France (Draper, 1885–86, pp. 323, 358). Le Seuer had traded on the upper Mississippi for some years before he established a post between present Hastings and Redwing, Minn., in 1695 (Buck and Larsen, 1947, p. 562); and shortly after 1700, he established Fort L'Huillier at the mouth of Blue Earth River. The Delisle map of 1718 shows a "Chemin des Voyageurs" running from the mouth of the Wisconsin River to the R. du Rocher, across present northern Iowa (Paullin, 1932, pl. 24; Tucker, 1942, pl. 15).

Stirling's work near Mobridge probably dates after the year 1700; but that the noncontact burials, particularly in the case of Cemeteries 1 and 2, may well precede that date by several or many decades.

As has already been noted several times, Cemetery 4 can be definitely correlated on documentary grounds with an Arikara occupancy of the Leavenworth Site (39CO9), dated circa 1803–32. Here was found the greatest abundance of trade goods, both in absolute quantity and in the number of burials involved. Moreover, the grave furnishings here included a much larger proportion of perishable items, whether of native or of trade origin, than were revealed at any of the other cemeteries. Finally, none of the other three cemeteries, or the villages with which they were presumably affiliated, can be identified with historically documented Indian communities. All the available evidence, in short, indicates that Cemetery 4 was the latest and most recent of the four.

Continuing on the assumption that the relative abundance of white contact materials from the graves in each of the cemeteries is indicative of the degree of Caucasian influence and therefore of relative age, the remaining three burial sites, Cemeteries 1, 2, and 3, may be arranged in chronological order. Thus, at Cemetery 1 a few glass beads associated with an infant skeleton were the only certain evidence of white trade relations; a copper stain on another skull may or may not point in the same direction. In terms of individuals, only two, at most, of an estimated 40, or 5 percent, were accompanied by trade articles; and, incidentally, no perishable materials were reported. At Cemetery 2, 13 of 49 individuals, or 26.5 percent, were accompanied by white trade objects; and perishable goods were found with seven burials. In Cemetery 3, three of six individuals, or 50 percent, had trade goods. These relative percentages—5, 26.5, and 50—fall well below that for Cemetery 4, where 23 of 33 individuals, or 70 percent, were accompanied by white trade items. On this basis, then, the sites would suggest a chronological series beginning with Cemetery 1, where the incidence of trade materials is lowest, progressing successively through Cemeteries 2 and 3, and ending with Cemetery 4. In passing, we may note that burial accompaniments of any kind, whether native or white trade items, show the same sort of quantitative progression, except in the case of Cemetery 3, which is represented by the smallest and least satisfactory amount of material.

On the evidence now at hand, therefore, I suggest that Cemeteries 1, 2, 3, and 4 were associated with village sites occupied at various times and, temporally, in the same order, Cemetery 1 being the earliest and Cemetery 4 the most recent. This sequence, it will be recalled, parallels that suggested for the village sites which are presumed to be associated with the respective cemeteries, on the basis of the sherd samples brought back by Stirling (p. 105).

CULTURAL RELATIONSHIPS

In attempting to determine the relationships, other than chronological, of Cemeteries 1 to 4 to each other, or to other sites and manifestations in the locality, several serious difficulties obtrude. In the first place, as already noted elsewhere, we cannot be altogether certain that the materials recorded from Cemetery 2, and perhaps also those from Cemetery 1, necessarily represent a single community. Strong (letter of February 13, 1951) has pointed out that the burials at Cemetery 2 could have come from either or both of two nearby village communities (39CO32 and 39CO33) that are apparently assignable to different cultural and time horizons. There is a possibility that the Mobridge Site (39WW1), with which Cemetery 1 was presumably affiliated, was also occupied by two different groups. These possibilities, of course, must be borne in mind in evaluating any conclusions based solely or primarily on the burial ground materials.

In the second place, our scanty knowledge of the rich and rather complex archeology of the Mobridge locality has not yet crystallized into the detailed framework needed to fit relatively one-sided and limited bodies of data, such as we are here considering, into a demonstrable time or cultural sequence. Strong's 1932 investigations, when organized and published in full, will undoubtedly go far toward remedying this difficulty; but that eventuality, of course, is not directly helpful at this writing. Moreover, Strong's findings were primarily in village sites, and are not in all cases based on the time-consuming stratigraphic studies that must be made before we can speak with assurance of the local cultural picture at various times in the past. And, of course, the materials recovered from village site investigations, where sequences are based largely on ceramic samplings, on house forms, etc., are not comparable in many particulars to the findings, involving largely nonceramic items, at burial grounds.

Recognizing, then, the provisional nature of most of the generalizations that can be advanced at the moment, it may still be worth while to see where attempts at cultural comparisons lead us.

Perusal of the burial-site data discussed in this study suggests that Cemeteries 2, 3, and 4 represent, in general, closely related traditions and mortuary practices. Primary burial in dug graves, usually as single interments accompanied by various amounts of grave goods, characterizes all three sites. A few artifact types or categories of grave goods are common to all three. These include: spatulate bone objects of unknown use, shaft straighteners of mammal rib bone, shell objects, and the use of animal bones and teeth or of bird bones.

Olivella shell beads, worked catlinite, and seeds of various kinds were found in graves in Cemeteries 2 and 4; their absence at Cemetery 3 might well be due to the much smaller sample obtained there. Stone spheroids occurred in Cemeteries 1 and 4. Metal and glass trade goods from Cemeteries 2 and 4 were much alike, insofar as they are comparable; but they were much more abundant and varied in Cemetery 4. Pigments of various colors were found in all four sites. This does not make a very impressive list of parallels, it must be admitted; but considering the time factor probably involved, the apparent differences may mean less than the similarities noted. So far as the burial data themselves are concerned, I see no reason for regarding Cemeteries 2, 3, and 4 as anything other than successive stages in what is probably, in a historical sense, a single line of cultural development.

Since Cemetery 4 can be historically documented and is referable to an Arikara occupancy of circa 1803–32, we may inquire next where the two earlier sites, Cemeteries 2 and 3, fit into the local picture. Cemetery 3 cannot be correlated with any documented village site and is therefore presumably pre-1800. The nearby village site (Nordvold 1, or 39CO31), with which it presumably affiliates, superficially resembles many other small fortified communities of the Arikara country. On the basis of limited observations at this site, Strong (letter of February 13, 1951) suggests that it may be "pure Arikara," perhaps approximately coeval with the Lower Cheyenne River Site (39ST1), which in turn he dates in one place at circa 1770 and elsewhere identifies with one of the Arikara villages visited by Trudeau in 1795 (Strong, 1940, pp. 361, 381). This latter identification, which I once uncritically accepted (Wedel, 1949, p. 331), no longer seems tenable in the light of Trudeau's account; and if Site 39CO31 (Nordvold 1) resembles the Lower Cheyenne River Site very closely, it would seem that a dating earlier than 1795 should be considered. Unfortunately, the Stirling collections include no sherd samples or pottery vessels from Cemetery 3, or from the nearby village site, so that I can add nothing to Strong's observations.

Cemetery 2 is likewise undocumented historically; and here matters are further complicated by the possibility that we may be dealing with a mixed lot of data. Thus, Strong (letter of February 13, 1951) suggests that the burial-site materials may be "mixed between [Nordvold] villages 2 and 3 [i. e., Sites 39CO32 and 39CO33]." He notes further that Nordvold 2 is "probably coeval with Rygh [39CA4], possibly the first half of Rygh (levels I–IV). Cultural identity: apparently La Roche Aspect (pottery of the incising technique)." Nordvold 3 he suggests is a "mixed site, combining Grand River (Arikara) and La Roche Aspect (incising) pottery types.

Latter dominant. Thus, Burial Ground No. 2 might be in part prehistoric through proto- to historic."

The foregoing suggestions regarding cultural affiliations of the two nearby village sites are apparently based in large part on ceramic remains, of which all too few were turned up in the excavations in Cemetery 2. That a substantial portion of the graves opened here represent a post-contact horizon is certain from their contents; but the contact materials are in every instance far less plentiful than they were in the burials at Cemetery 4, for which an early nineteenth century Arikara provenience has been demonstrated. On the other hand, the lower levels at the Rygh site to which Strong refers yielded no contact materials (Strong, 1940, p. 370), in contrast to Stirling's findings at Cemetery 2. It is possible, I suppose, that the contact burials in Cemetery 2 could be regarded as representing the occupants of the later nearby village site (Nordvold 3), whereas the noncontact burials should be assigned to an earlier precontact horizon possibly represented by Nordvold 2. So far as I can see, the field notes do not suggest any significant variation in burial methods or any other reason for thus separating the contact from the noncontact burials. It is possible that when the skeletal materials from this site, Cemetery 2, are carefully analyzed, some differences will become apparent between contact and noncontact burials.

In terms of cultural divisions now recognized or proposed for the Mobridge locality, the choice for pigeonholing the Cemetery 2 materials would seem to lie between the Grand River Aspect and the La Roche Aspect. Precisely what characterizes each of these, other than the ceramic traits hinted at by Strong above, I cannot say, nor do I know where these proposed complexes have been outlined in detail. The Grand River Aspect, I gather, includes historic Arikara materials, presumably including such manifestations as the Leavenworth Site and Cemetery 4. The La Roche Aspect, to judge from Strong's comments, includes earlier manifestations of prehistoric and protohistoric age. The Cemetery 2 materials, I suspect, are more apt to fit into the La Roche Aspect than into the Grand River; but this suggestion is subject to revision or abandonment in light of fuller definition of each of these two site groupings.

Cemetery 1, which I regard as the earliest of the four here considered, shows one rather marked difference from Cemeteries 2, 3, and 4, namely, a decided tendency toward secondary multiple burial. This may mean that the cultural affiliations of the site are with a tradition different from that represented by Cemeteries 2, 3, and 4; or equally, that we have here an example of an old form of burial that gave way eventually to single primary interment. If the second alternative is true, we have an interesting parallel to the situation in the Pawnee area of central Nebraska, where secondary burial in ossuaries in prehistoric times was superseded in historic times by single primary interment. Unfortunately, as already noted, the artifact yield at Cemetery 1 was so low and inadequate that cultural comparisons are not practicable. Strong (1940, p. 380) has suggested that the nearby village site (Mobridge Site, or 39WW1) was perhaps an "early Hidatsa site," noting further that the "ceramics are markedly different from both historic Cheyenne and Arikara." I have been informed by Cooper (letter of January 25, 1951) that two samples of pottery collected from the surface of this site, one in 1949, the other in 1950, are so dissimilar that "If I had not participated in making both collections, I should be inclined to think that they were actually from two different sites." This immediately raises the question of a possible dual occupancy by different peoples, and another as to whether our Cemetery 2 sample is a mixed lot or represents but one of several populations that once inhabited the site. So long as the cultural affiliations and history of the village site remain so much in doubt, there seems little point to discussing the possible cultural relationships of the cemetery on the basis of the evidence gathered by Stirling.

SKELETAL MATERIALS

Our discussion to this point has concerned itself entirely with the cultural and historical data. One more line of evidence remains to be touched on very briefly, namely, the skeletal materials from the various sites. Hrdlička included all of Stirling's measurable crania in his published Arikara series, along with several other South Dakota lots of diverse origin. He placed (Hrdlička, 1927, pp. 78–79) the putatively Arikara series of 53 male skulls and a smaller Ponca series as closely related physically to his Siouan type. This type he considers as one of the best differentiated on the continent. It is characterized by: a skull of moderate to good size, mesocephaly, a remarkable lowness of the vault, large face and jaws, medium-high orbits, and mesorhynic nasal aperture. It may be noted from his table that the Arikara skulls are not as low-vaulted as the Sioux proper; and, further, that the Arikara tend more toward mesocephaly than do the Mandan and Hidatsa, which is in line with Strong's comments elsewhere on another series of crania (Strong, 1940, p. 363).

Hrdlička did not attempt a site by site analysis of the Arikara series, and, unfortunately, the required detailed study and reexamination of the specimens is still unfinished at this writing. It is worth noting, however, that the measurements and computations made by Hrdlička on the Mobridge crania, when sorted into groups based on specimen provenience by cemetery, do not suggest any significant differences between the several series. Cemetery 4 unquestionably represents a historic Arikara population; and, judged by the published figures, the individuals from Cemeteries 2 and 3, so far as they go, suggest a closely similar stock. For Cemetery 1, the evidence is not quite so clear cut. The specimens now in the U. S. National Museum collections appear to resemble quite closely those in the foregoing series from Cemeteries 2, 3, and 4; but, pending reexamination of these and additional materials, final judgment must be withheld.

So far as I can learn from conversations with physical anthropologists, there seems to be no good reason why Arikara crania cannot ultimately be differentiated from Mandan and Hidatsa. Meanwhile, about all we can say is that there is nothing in the skeletal materials from Cemeteries 2, 3, and 4 to suggest anything other than an Arikara population, and that the Cemetery 1 collections in the U. S. National Museum apparently point in the same direction. Evidence for Hidatsa, Mandan, or other non-Arikara relationships appears to be negligible or absent. In short, Hrdlička seems to have been on the right track when he diagnosed all this Mobridge material as Arikara.

CONCLUSIONS AND GENERAL DISCUSSION

Conclusions.—It is unnecessary to emphasize again a point to which I have several times directed attention, namely, the very one-sided nature of the archeological data we have been considering. So far as the cultural aspects of burial-site findings are concerned, there are virtually no reported data from the Upper Missouri area that might be compared, point by point, with the Stirling collections from Mobridge. Moreover, since most interpretations so far advanced for the reconstruction of native culture history in the region, implicitly or otherwise, rest very largely on pottery analyses, which are not directly applicable to the present Mobridge collections, there exists little solid basis here for making cultural inferences. Such artifacts of bone, stone, shell, and other materials as did come to light from the cemeteries appear to represent mainly types that were widespread throughout the region, and they cannot be relied on for specific tribal or detailed culture identifications.

Review of the evidence presented in this account of certain burial sites near Mobridge, suggests that the following conclusions can be drawn:

1. Cemetery 4 was the burial ground for two closely contiguous and historically documented Arikara villages (Leavenworth Site, or 39CO9) inhabited circa 1803–32. The materials therefrom are significant for several reasons: from the standpoint of native culture history, they illustrate the burial complex of the Arikara in the early

nineteenth century, besides suggesting the marked degree to which white trade had penetrated into various facets of the native way of life; and from the standpoint of physical anthropology, they offer a well-controlled series of skeletal materials of known age and tribal affiliation.

2. Cemeteries 2 and 3 were the burial sites for two (or three?) native communities that chronologically preceded the Leavenworth Site and Cemetery 4. The relatively minor differences between these two and Cemetery 4 appear to reflect primarily an earlier time period rather than a distinct culture tradition or tribal group. As between these two sites, Cemetery 2 evidently precedes Cemetery 3.

3. The skeletal materials from Cemeteries 2 and 3 are essentially like those from Cemetery 4, which represents a historic Arikara population, and it may be concluded that all three sites were inhabited by peoples of Arikara physical stock.

4. Cemetery 1 diverges from Cemeteries 2, 3, and 4 with respect to burial methods, as well as in the amount and nature of the associated grave offerings; but its exact cultural and tribal affiliations must remain more or less problematical until the nearby village site (39WW1) has been more precisely identified. On present evidence, the skeletal materials here do not suggest a marked deviation from the Arikara series as represented at Cemeteries 2, 3, and 4. Chronologically, this can be regarded as the earliest of the four cemetery sites considered in this paper.

Discussion.—Such reconstructions, local and regional, as have been attempted to date for the Missouri Valley in the Dakotas, lean heavily on the evidence of the ceramic remains. In varying degree, these have been bolstered, amplified, or adjusted to take into account the evidence of variation in house types, in village patterns, in subsistence economies, or in other matters. Implicitly or otherwise, however, most discussions of the problem inevitably take off from, or fall back on, the pottery involved. This, of course, continues the tradition that pottery is an unusually sensitive indicator of chronological change, and of cultural relationships; and it makes use, quite properly, of a line of evidence that is usually abundantly present and that has often resulted in what we can regard as meaningful reconstructions.

Difficulties are apt to arise, however, when the ceramic variations, whether chronological or areal, are interpreted in terms of historical tribal entities; and, in particular, when the demonstrable identifications of certain wares with specific tribes on the historic level are projected into the undocumented past. Thus, it has become increasingly the practice to classify, largely on the basis of historic pottery types, certain sites and manifestations as Arikara, others as Mandan, still others as something else, even though the sites so identified cannot be directly correlated on other grounds with the suggested tribe.

In my opinion, the Stirling collections from burial sites in the Mobridge locality bear directly on this problem. My evidence for viewing the four cemeteries as a chronological series has been presented, as have the reasons for believing that all four stand an excellent chance of being attributable, on grounds of physical anthropology, to an Arikara population. With reference to Cemetery 4, there can be no question regarding the cultural and tribal allocation, since this is backed by documentary evidence. For Cemetery 3, the materials are too scanty to be conclusive, but what is available also conforms to the historic Arikara. For Cemetery 2, the picture is less clear. The sherd samples brought back by Stirling from the nearby village site (or sites?) are not particularly reminiscent of the historic Arikara materials from Leavenworth; indeed, they are much more like his sample from the Mobridge Site, with which Cemetery 1 presumably affiliates. This same relationship is perhaps implicit in Strong's suggestion that Nordvold Village 2 pottery suggests the earlier levels at the Rygh Site (39CA4); elsewhere, he observes that the Mobridge Site is "of somewhat similar nature" to Rygh.

From these somewhat circuitous arguments, it would appear that Nordvold Village 2, from which came an undetermined portion of Stirling's Cemetery 2 materials, has cultural affiliations with Rygh and Mobridge, and that these relationships, as judged by the available sherd samples, are probably stronger than those between Nordvold Village 2 and what is usually called historic Arikara. It is of interest to note, therefore, what Strong has said concerning the possible tribal affiliations of the Rygh and Mobridge sites.

As to Rygh, he observes (1940, p. 380) that: "At present I regard the Rygh site as the most southerly location that can be archeologically demonstrated, at least with any relatively high probability, as being culturally cognate with Mandan. It carries in its cultural inventory practically all historic Mandan traits and many others as well. These latter should eventually be highly significant in working out further cultural connections and derivations."[19]

Of the Mobridge site, Strong says (1940, p. 380): "I am inclined to regard this as an early Hidatsa site. One thing seems certain, and that is that it is not Cheyenne as Stirling thought probable (1924, p. 66). The ceramics are markedly different from both historic Cheyenne and Arikara."

These judgments, provisionally advanced on the basis of ceramic and other cultural materials, seem to make sense in light of the evidence considered. It remains to be seen, however, whether the evidence of physical anthropology will corroborate these interpretations. If Nordvold Village 2 affiliates with the lower levels at Rygh, it is suggestive that the skeletal materials inferentially originating in the former are of Arikara physical type. It may be significant, also, that the skeletal materials from Cemetery 1, presumed to have originated in the nearby Mobridge Site, likewise suggest an Arikara population. In other words, at least one village site whose ceramic materials resulted in its tentative identification as early Hidatsa seems to have been populated by Arikara; and another that has affiliations with a site identified as possibly Mandan, even more surely was inhabited by people not differing significantly from the early nineteenth-century Arikara.

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[19] Will and Hecker (1944, p. 75) class Rygh as Arikara, "apparently . . . contemporary with the later Heart River period Mandan Sites."

It is abundantly evident that on the historic level there were numerous similarities in the material culture of the Arikara and their more northerly sedentary neighbors, the Mandan and Hidatsa. Undoubtedly, there were also many resemblances in the period before 1800; and these must have included ceramics as well as other categories of artifacts. Frequent interchange of ideas and techniques certainly took place, as archeologists have pointed out; and while the general distinctiveness of Mandan-Hidatsa ceramics in the Heart River region from Arikara ceramics below Grand River may be granted, one wonders how reliable a clue as to tribal identity the pottery is in an area, such as Mobridge, where both Arikara and Mandan-Hidatsa may long have been in close contact. One wonders, too, what the skeletal materials from such putatively "non-Arikara" sites as Rygh might show were definitive samples available for analysis.

All this is not to suggest, of course, that tribal identifications based on ceramics or other cultural materials are necessarily or invariably unsound. I merely call attention here to certain facts that suggest caution in attributing certain assemblages of material traits to specific tribes when there is neither linguistic, documentary, nor somatological evidence to bolster or correct our guesses. As Strong (1940, p. 363) has aptly observed with reference to the Upper Missouri region, "The documentation of many sites and the linking of definite archeological horizons in this area opens a promising field for exact instead of speculative work in physical anthropology." Unfortunately, here as elsewhere in the Great Plains, serious studies of physical anthropology in relation to the archeological findings have been long neglected. It is high time that qualified students bestirred themselves, and undertook examination of the materials already on hand in many museums and laboratories throughout the area. As for the field archeologist, he should not need to be reminded that the potsherds, the houses, and most other materials he excavates were fashioned by human beings, and that our cultural and historical reconstructions will remain all the more incomplete so long as we do not search out and gather up what we can of those erstwhile artisans and craftsmen.

I have elsewhere recorded my belief that the history of the Arikara, as a group distinct from the Pawnee of Nebraska, probably encompasses a time span of several centuries. During that time, they unquestionably dwelt in a great many villages—far more, probably, than can possibly be accounted for by the documentary records of the eighteenth and nineteenth centuries. Broadly viewed, it is perhaps true that their history is one of "constant northward movement up the Missouri" (Strong, 1940, p. 359). But just as in historic times there were frequent shorter southward movements by certain village or band groups, so it seems probable that in pre-1800 days there may have been repeated shifts back and forth within the larger territory the Arikara claimed as their own. The present data from Mobridge suggest to me that the Arikara may have been, even early in the eighteenth century and perhaps long before, living in villages as far north as the Grand. Whether their seeming concentration later in the vicinity of present Pierre and the Cheyenne River represents a withdrawal from the more northerly districts as a result of Dakota expansion, of rapid population decline from smallpox, or a combination of these and other factors, I cannot say; but the possibility seems good that something of the sort may have happened. This is but one of a great many questions that must remain unanswered, or partly answered, so long as large-scale systematic excavation in the region remains a thing of the future.

Reverting to an earlier portion of this discussion, one final viewpoint must be made in closing. There are those who will argue that it is of secondary consequence whether a given site of cultural manifestation can be tribally identified, that a "taxonomic framework which does not imply affiliation with historic tribes when documentation is lacking," will be sufficient. I agree that such a framework is desirable, can have great usefulness, and may be long overdue. But I also insist that it must not become an end in itself. In the Upper Missouri region, we have to deal with tribes of diverse linguistic stocks, of varied physical types, and of widely dissimilar geographic origins and cultural antecedents. To arbitrarily lump the cultural remains left by these several peoples, on the basis of similarities in pottery, stonework, houses, etc., is to risk losing sight of the individual threads of people and their cultures that eventually merged to form the fabric of what has been called Upper Missouri River culture. In other words, I still believe that so long as we can detect any traces—

whether through physical type or through cultural evidences—of each of the various native peoples who dwelt in this region, every effort should be made to ferret out, assemble, and document that evidence. I recognize the limitations of the so-called direct historical approach; but I believe, too, that for the late prehistoric to historic periods, our perspectives will be deepened and broadened by an awareness of the developmental role played by the various peoples involved.

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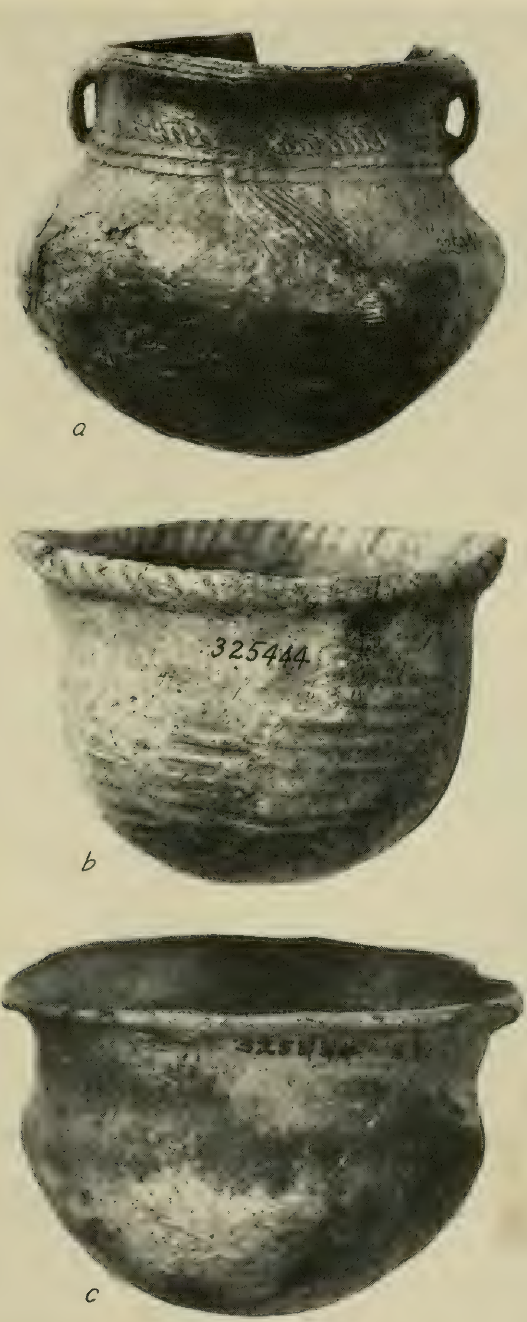
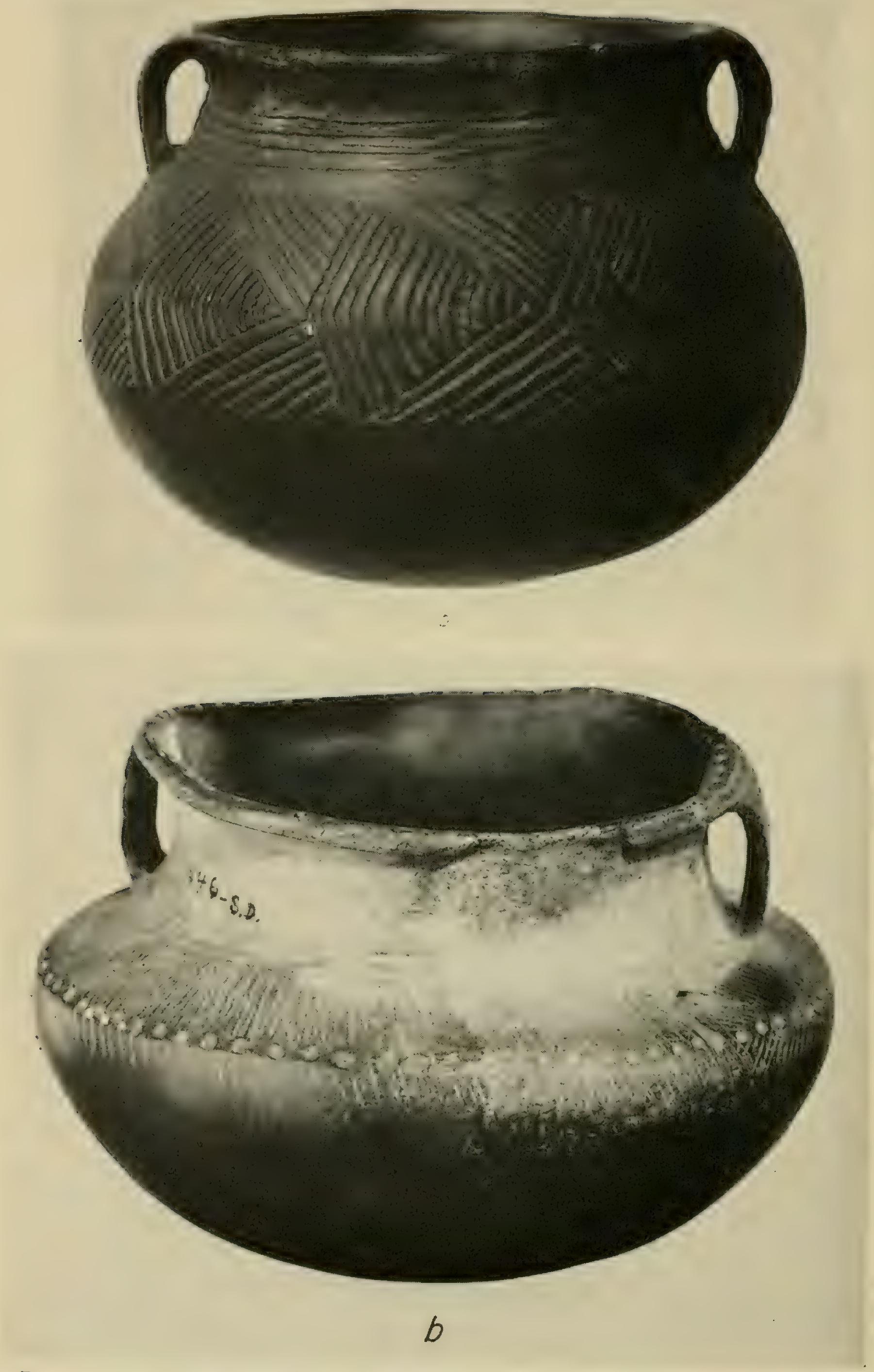
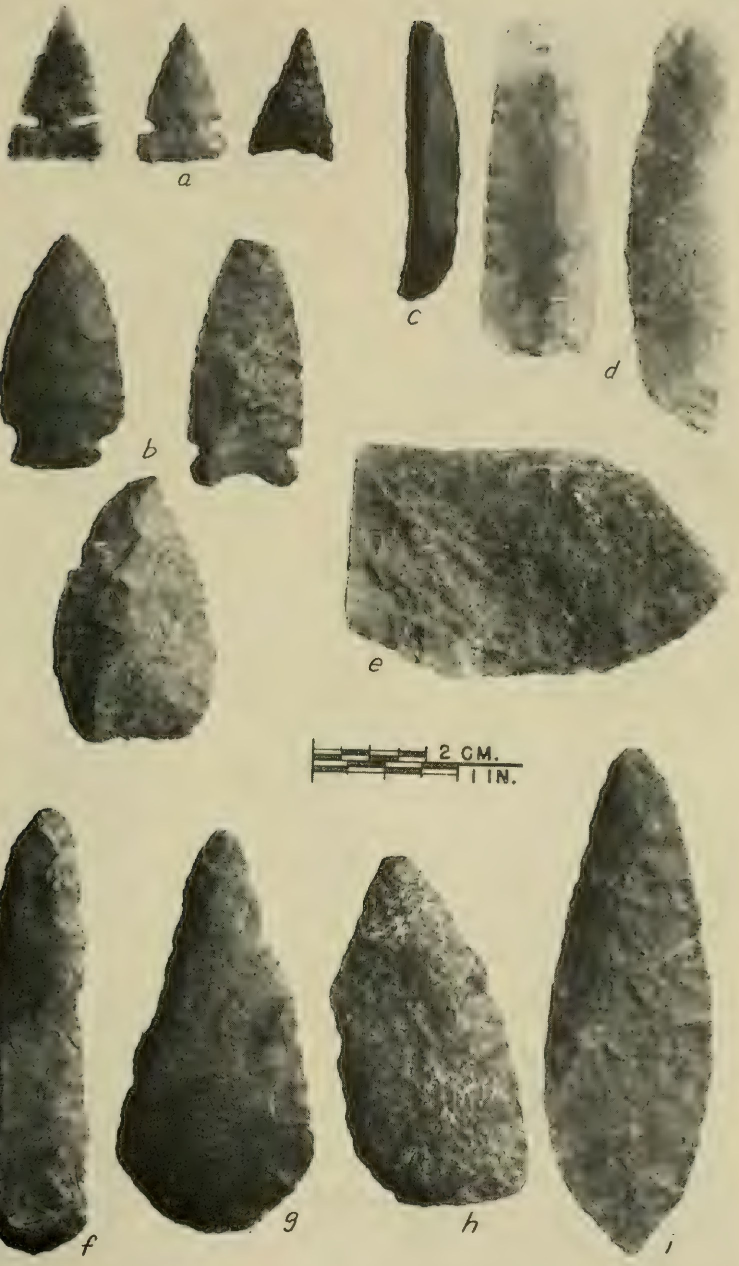


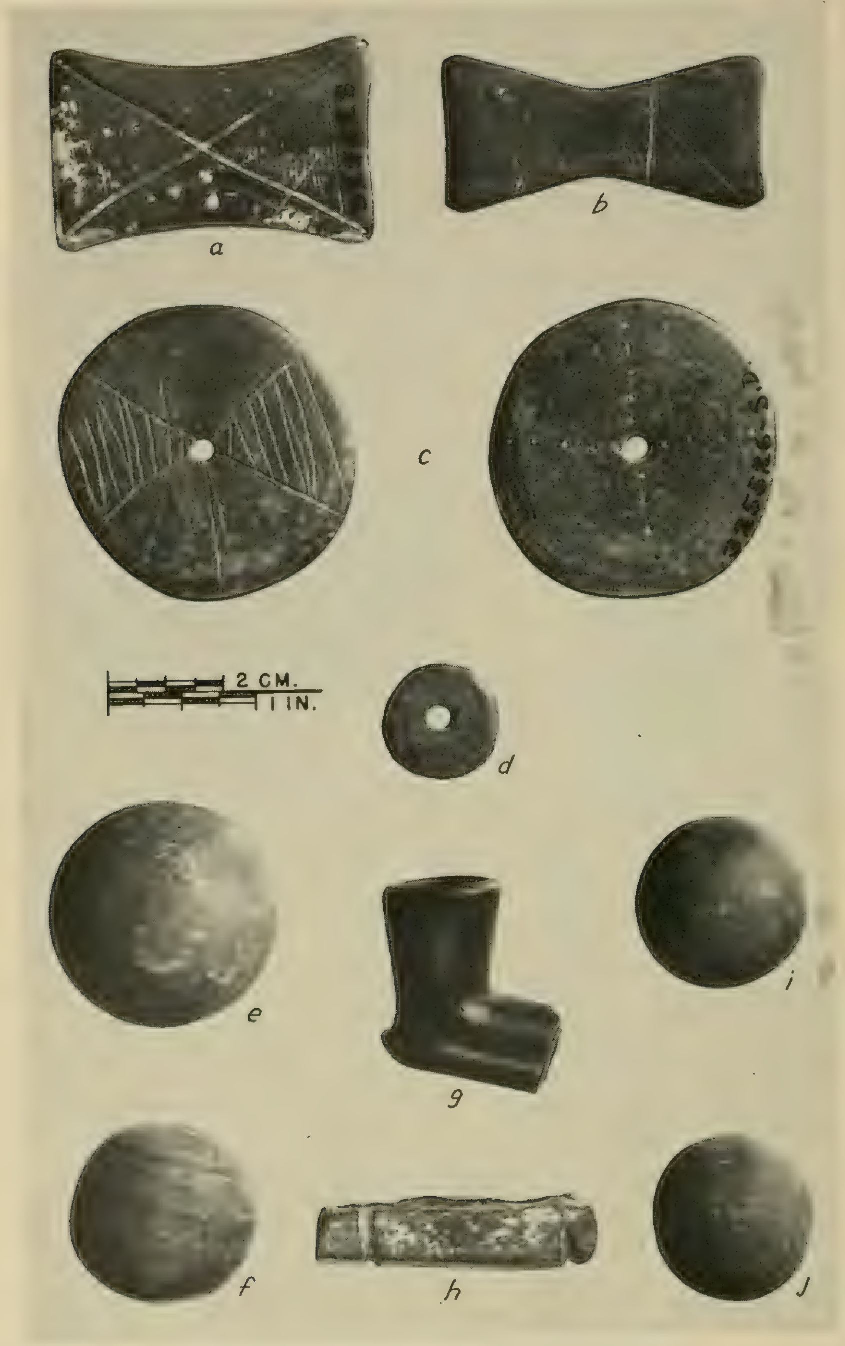
Small pottery vessels from Cemeteries 2 and 4, near Mobridge, S. Dak. Diameter of *a*, 10.4 cm.; *b* and *c* to same scale. (USNM Neg. 41514B.)



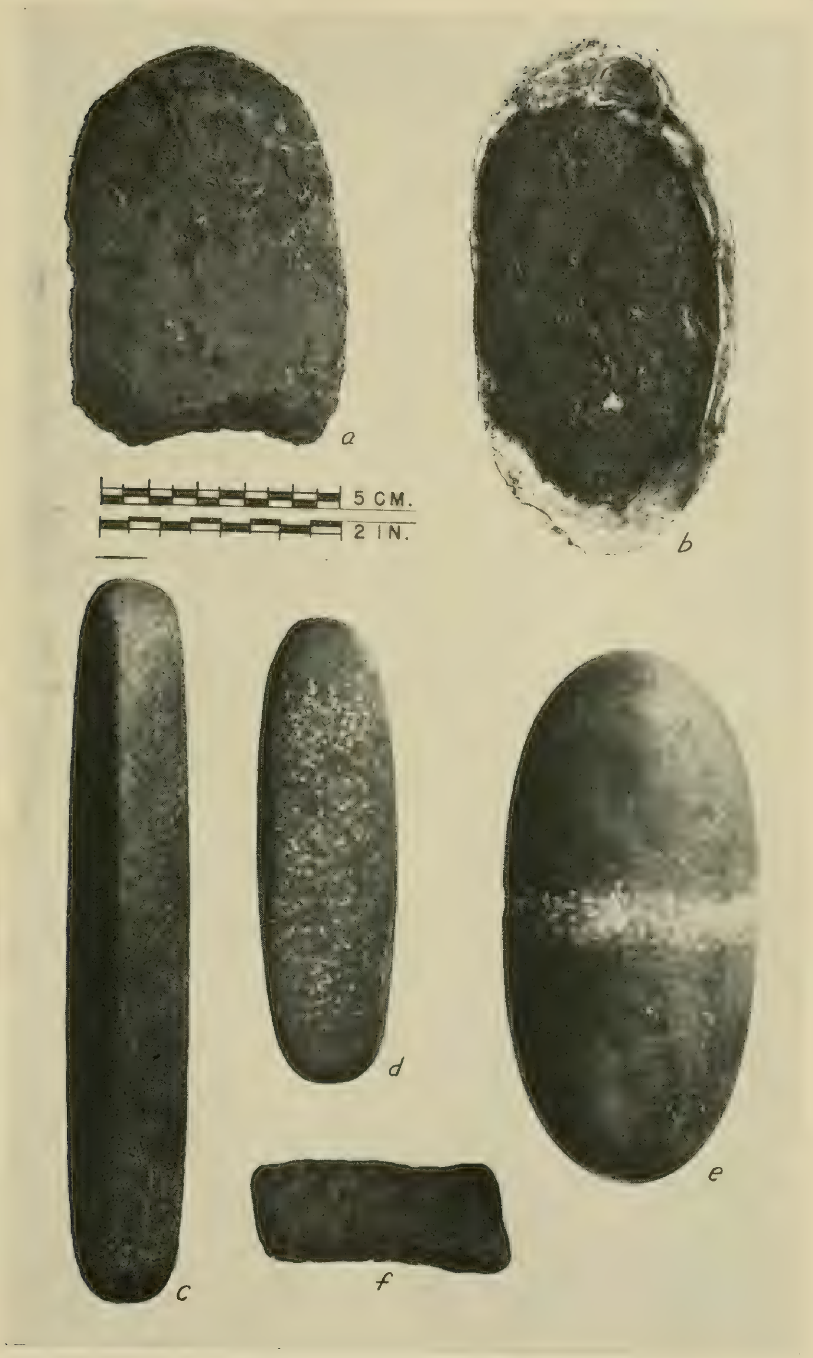
Reconstructed pottery vessels from village sites (?) near Mobridge, S. Dak. Diameter of *a*, 16.7 cm.; *b* to same scale. (USNM Negs. 41513, 41514A.)


a
b
c
d
e
2 CM.
1 IN.
f
g
h
i

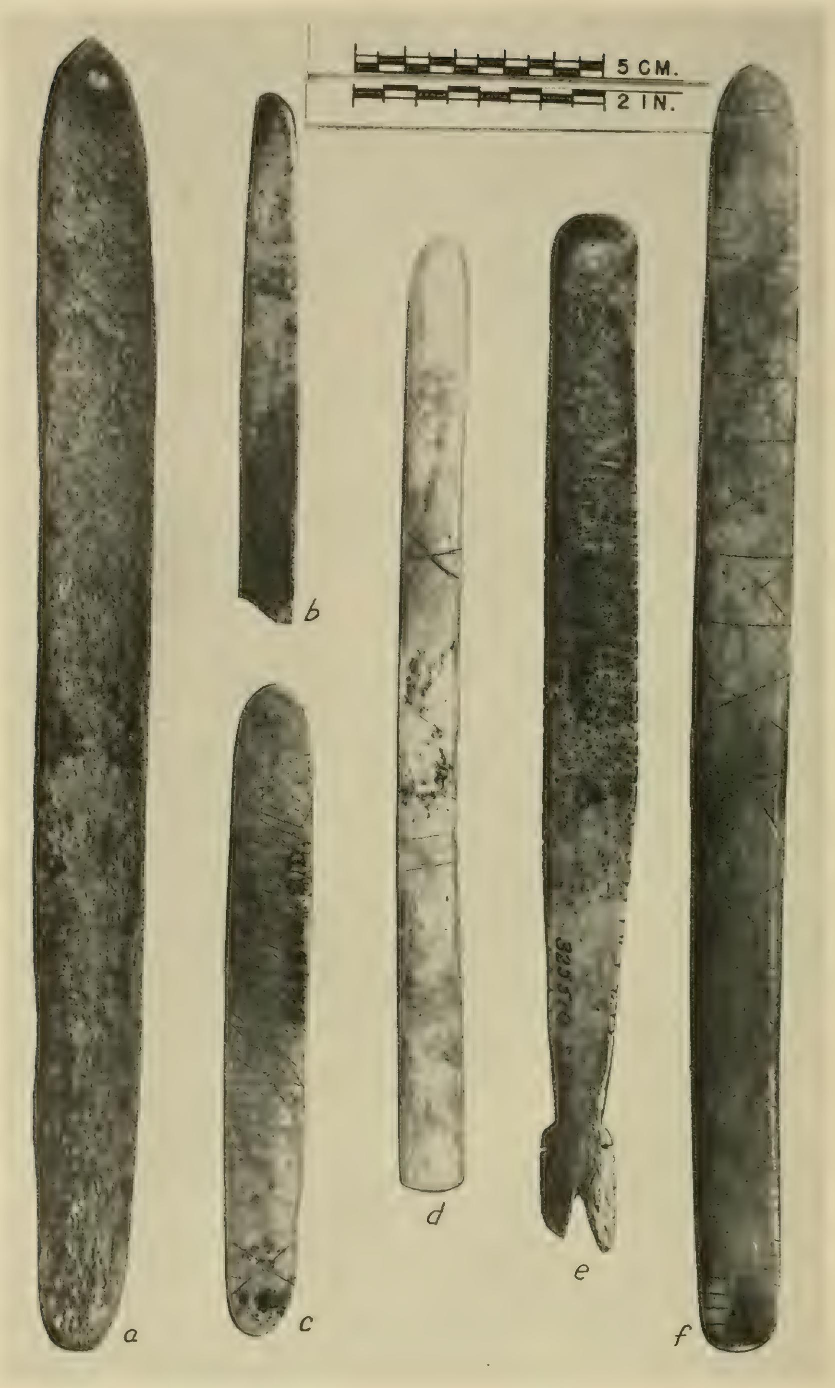
Chipped-stone artifacts from village and burial (*b*) sites near Mobridge, S. Dak. (USNM Neg. 41513C.)


a
b
c
325526-S.D.
2 CM.
1 IN.
d
e
i
g
f
h
j

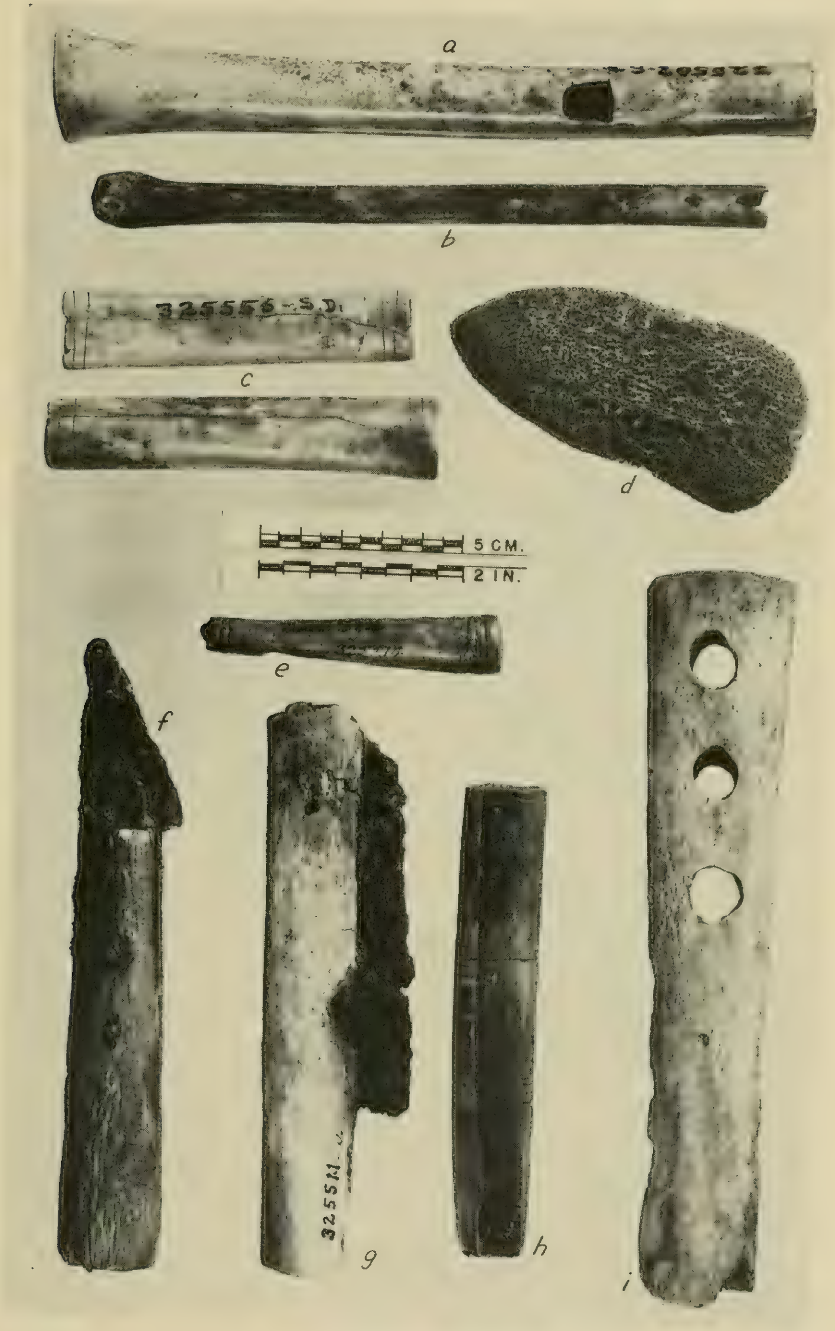
Catlinite and other ground-stone objects from sites near Mobridge, S. Dak. *a-c*, Cemetery 2; *d*, *g*, Cemetery 4. (USNM Neg. 41514.)



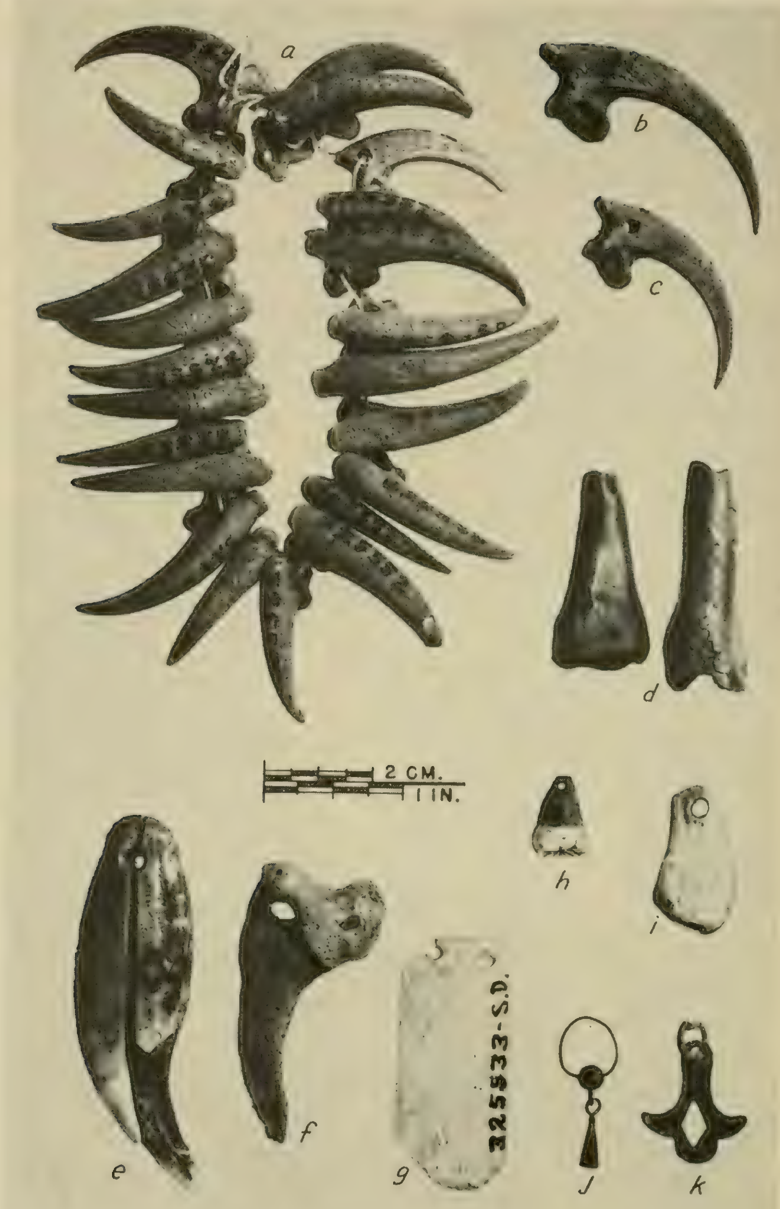
Red pigment (*a*, *b*), ground stone (*c-e*), and Halymenites fossil (*f*), from burials near Mobridge, S. Dak. (USNM Neg. 41515C.)



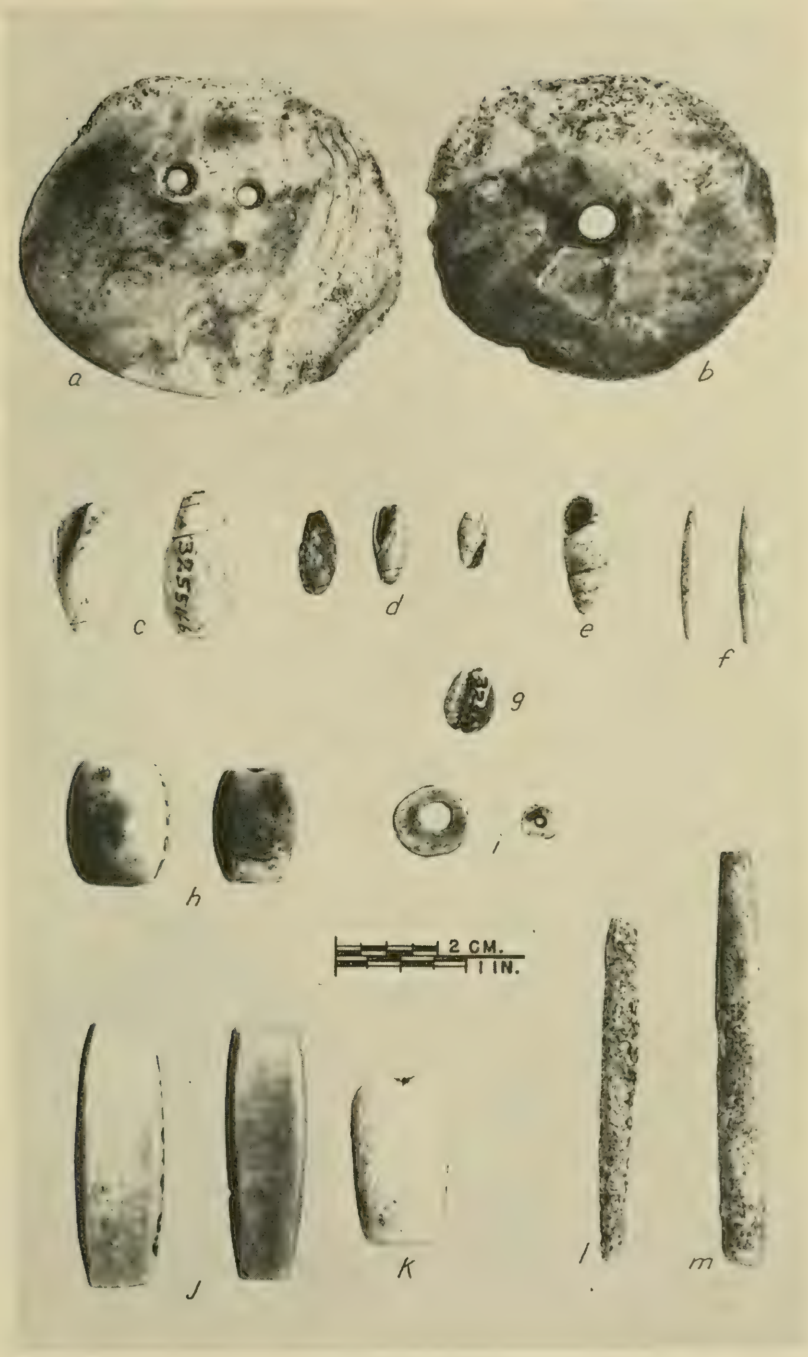
Spatulate bone objects, or "quill flatteners," from Cemeteries 2, 3, and 4, near Mobridge, S. Dak. (USNM Neg. 41515B.)


a
b
325556-S.D.
c
d
5 CM.
2 IN.
e
f
g
h
i

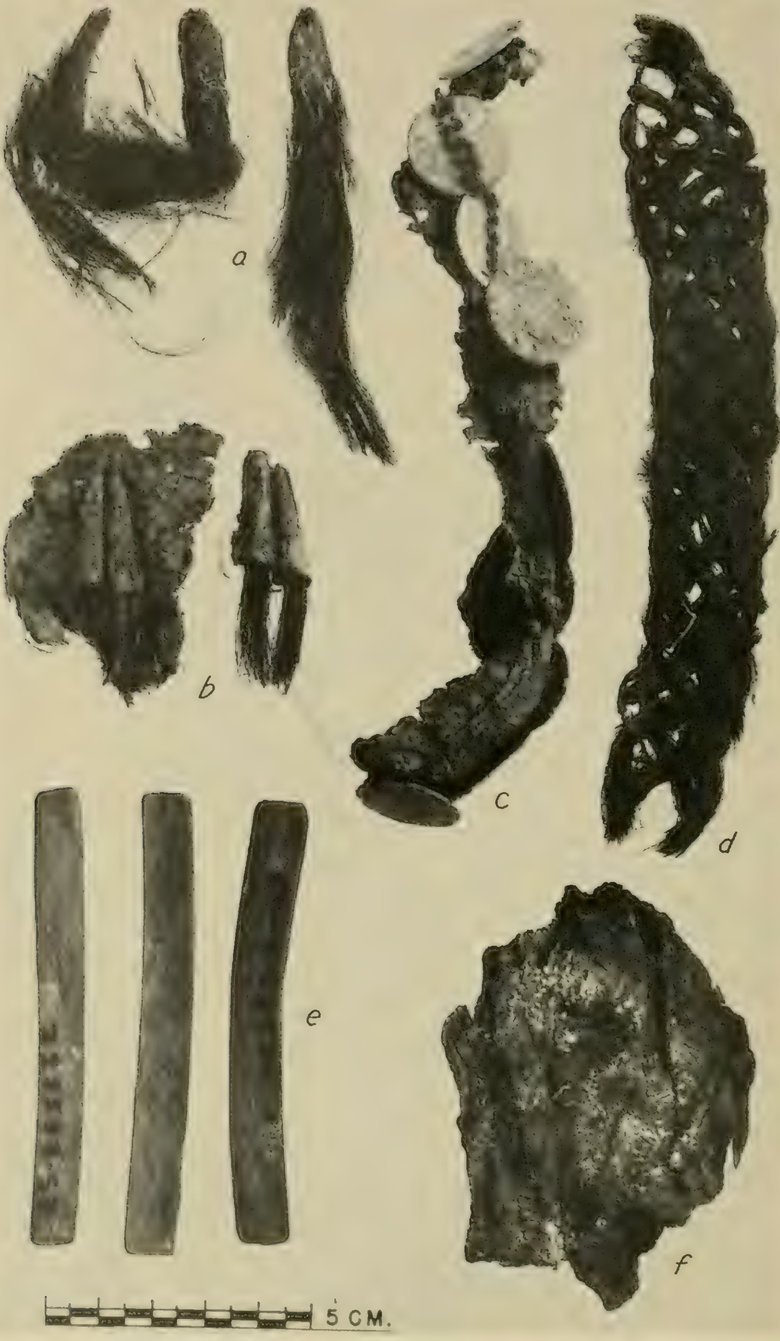
Miscellaneous bone artifacts and wood-hafted iron knife (*f*) from burial sites near Mobridge, S. Dak. (USNM Neg. 41514F.)


a
b
c
d
2 CM.
1 IN.
h
i
e
f
325533-S.D.
g
j
k

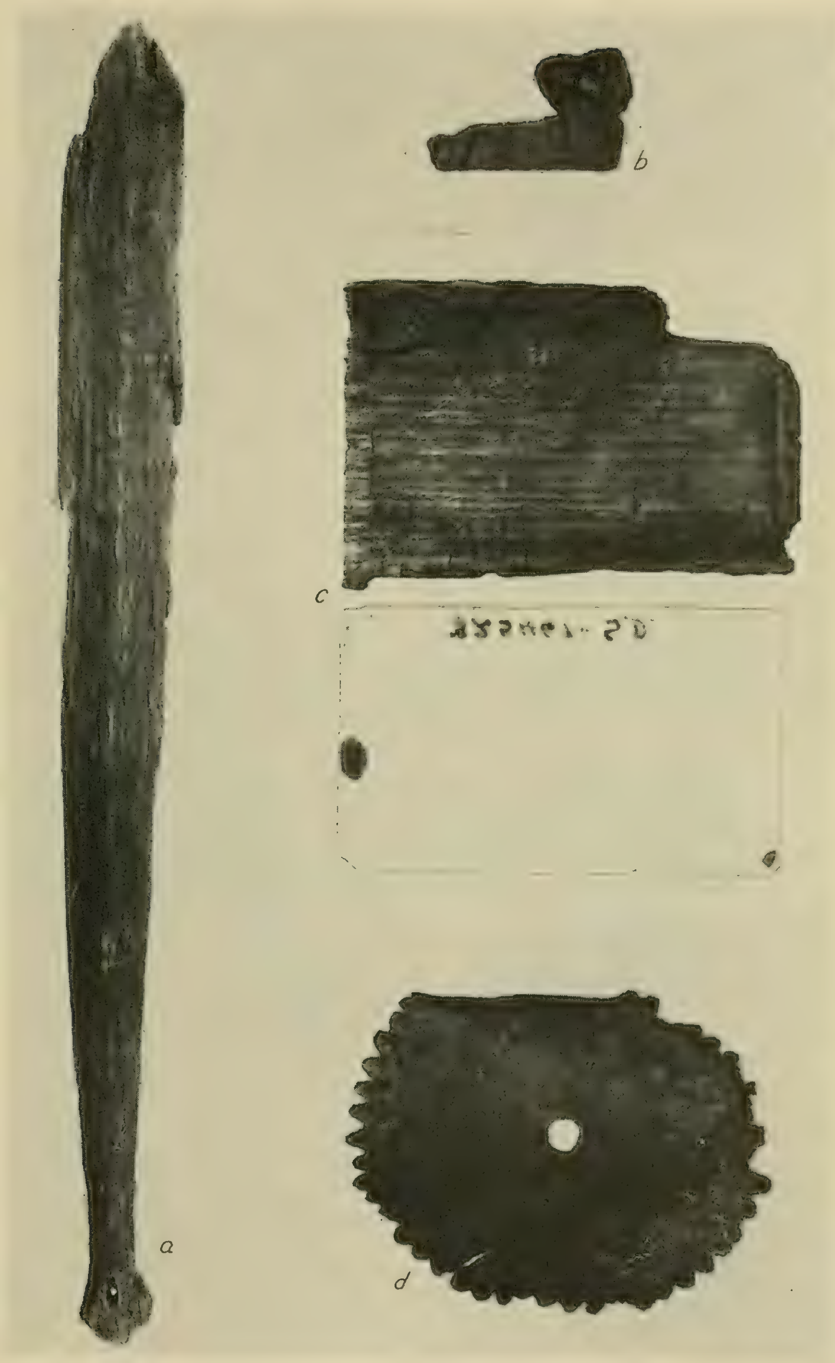
Perforated claws, teeth, and phalanges, and metal ear ornaments, from burial sites near Mobridge, S. Dak. (USNM Neg. 41515D.)


a
b
c
d
e
f
g
h
i
2 CM.
1 IN.
j
k
l
m

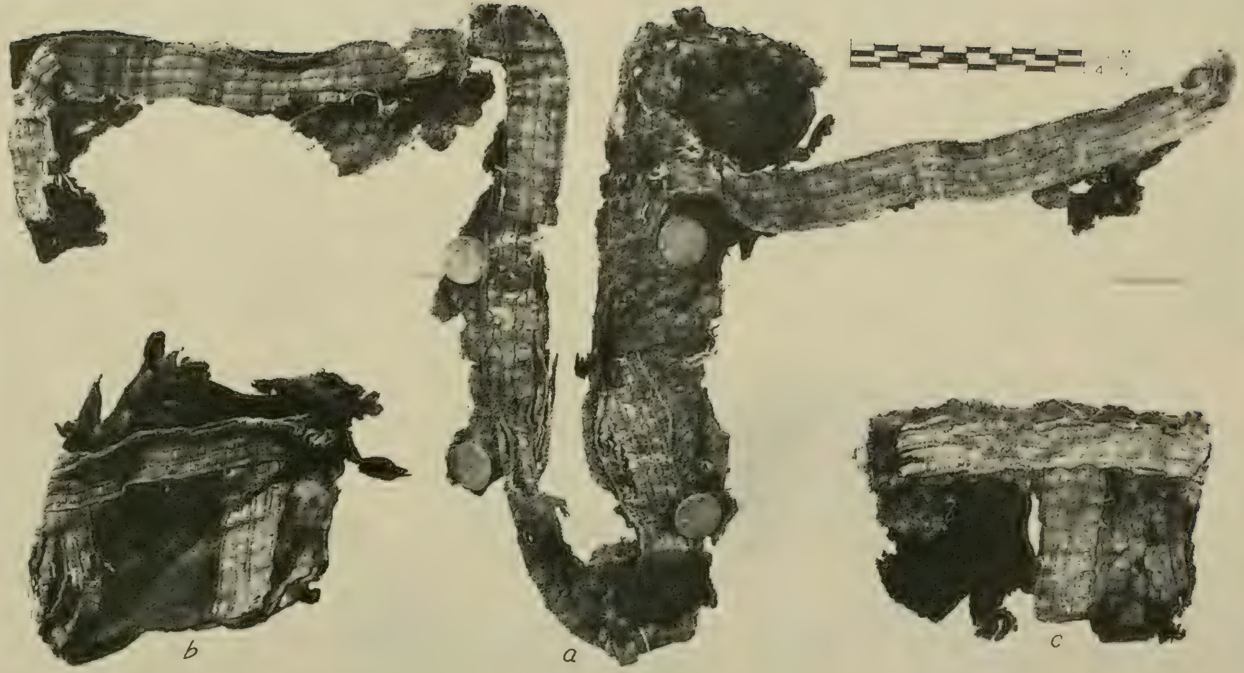
Ornaments of shell and gypsum, and hair pipes, from burial sites near Mobridge, S. Dak. (USNM Neg. 41515.)



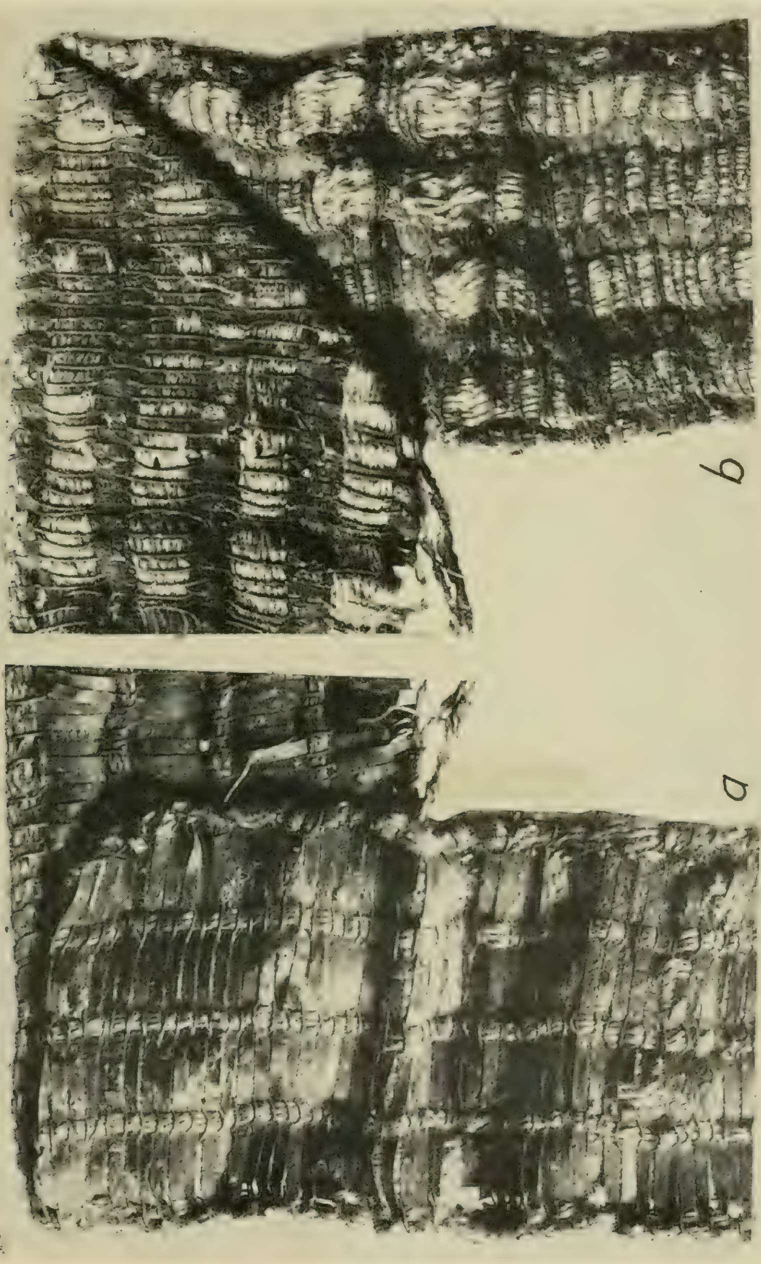
Miscellaneous articles of hair, leather, wood, and metal from Cemetery 4, near Mobridge, S. Dak. (USNM Neg. 41515A.)



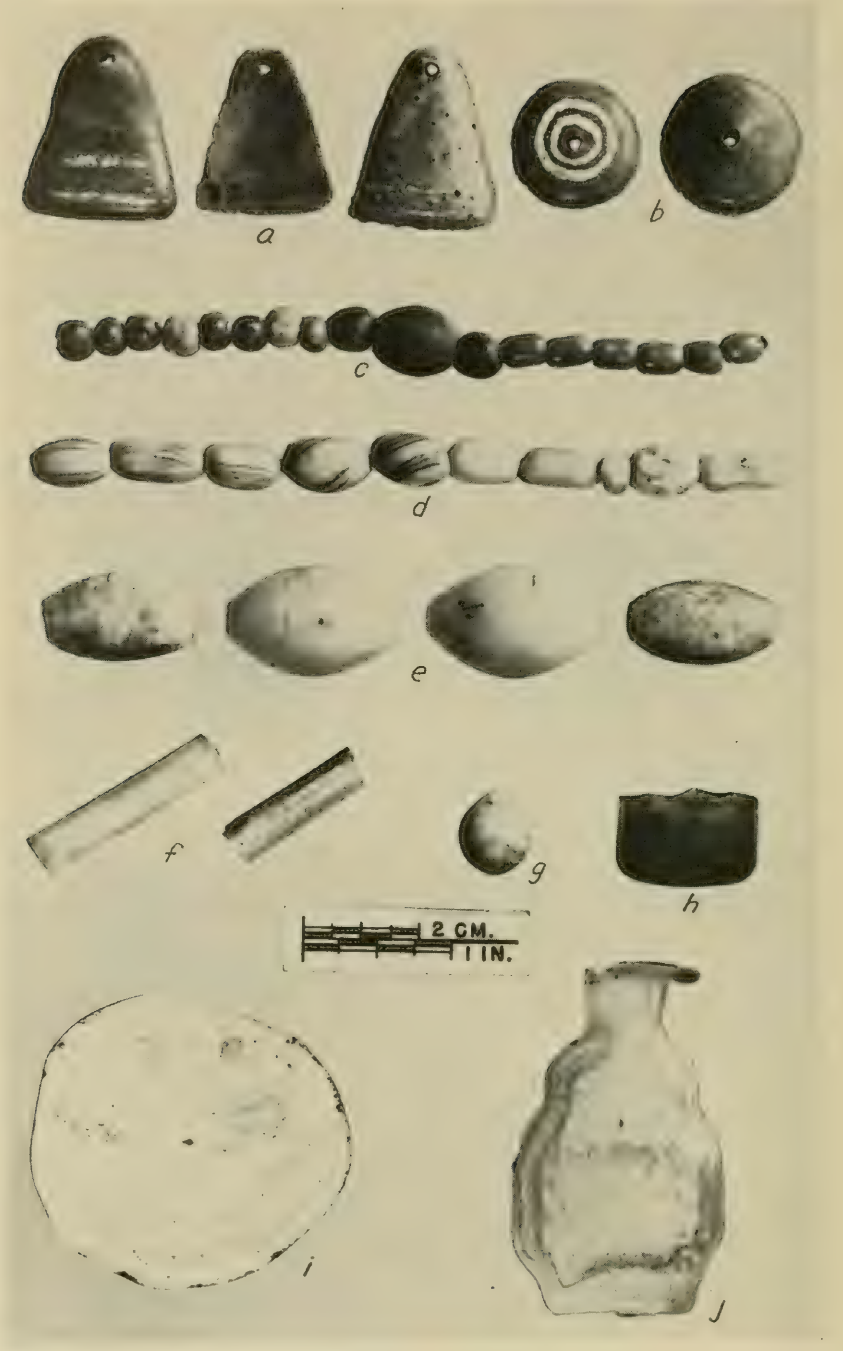
Wooden club (*a*, length 75 cm.), wood-backed mirror, and leather rosette, from Cemetery 4, near Mobridge, S. Dak. (USNM Negs. 41513A, 41513D.



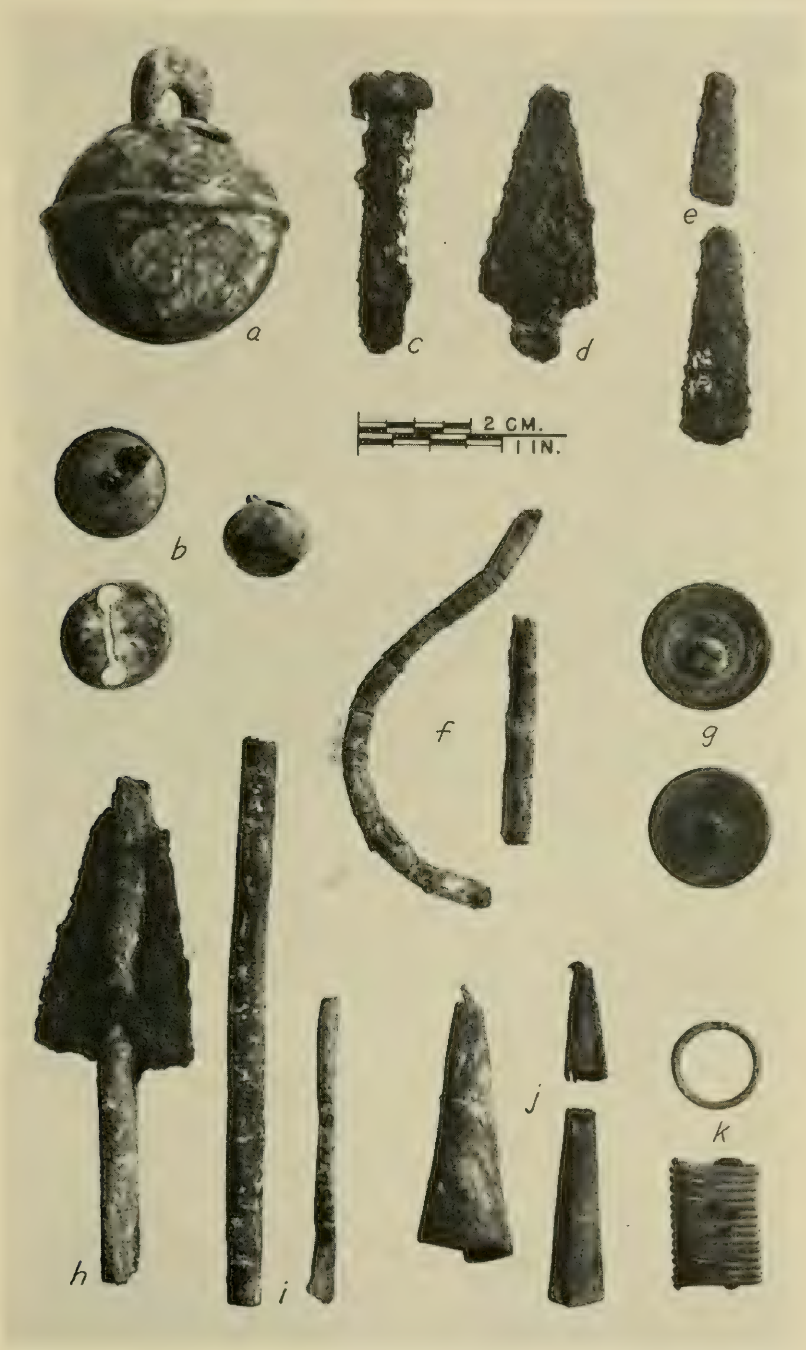
Metal lace trim on wool shirt from Grave 11, Cemetery 4, near Mobridge, S. Dak. Suggested arrangement of lace at shirt opening and on shoulders (*a*), and on cuffs (*b*, *c*). (USNM Neg. 41513F.)



Details of lace shown in plate 66: front (*a*) and reverse (*b*). (USNM Negs. 41515F, 41515G.)


a
b
c
d
e
f
g
h
2 CM.
1 IN.
i
j

Native and trade glass and earthenware objects from burial sites near Mobridge, S. Dak. (USNM Neg. 41513E.)


a
c
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2 CM.
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b
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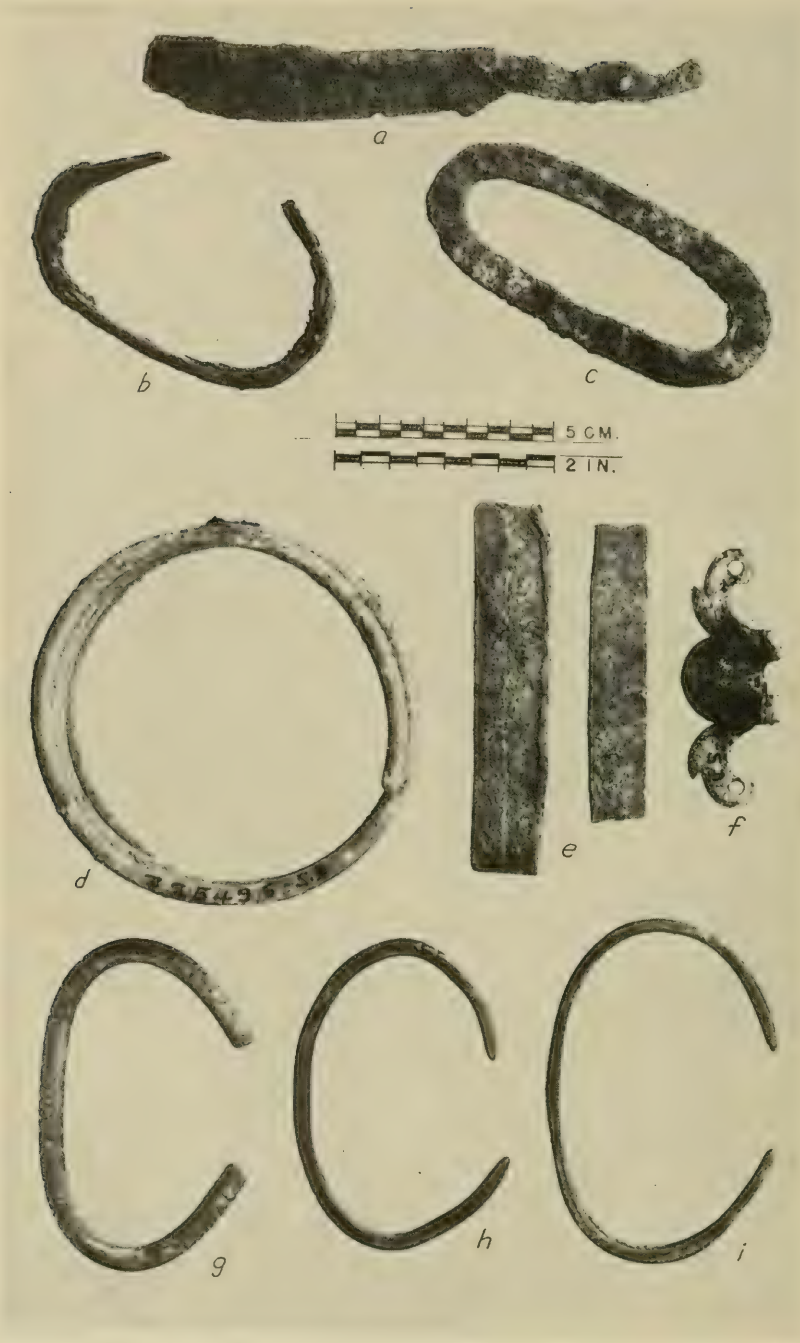
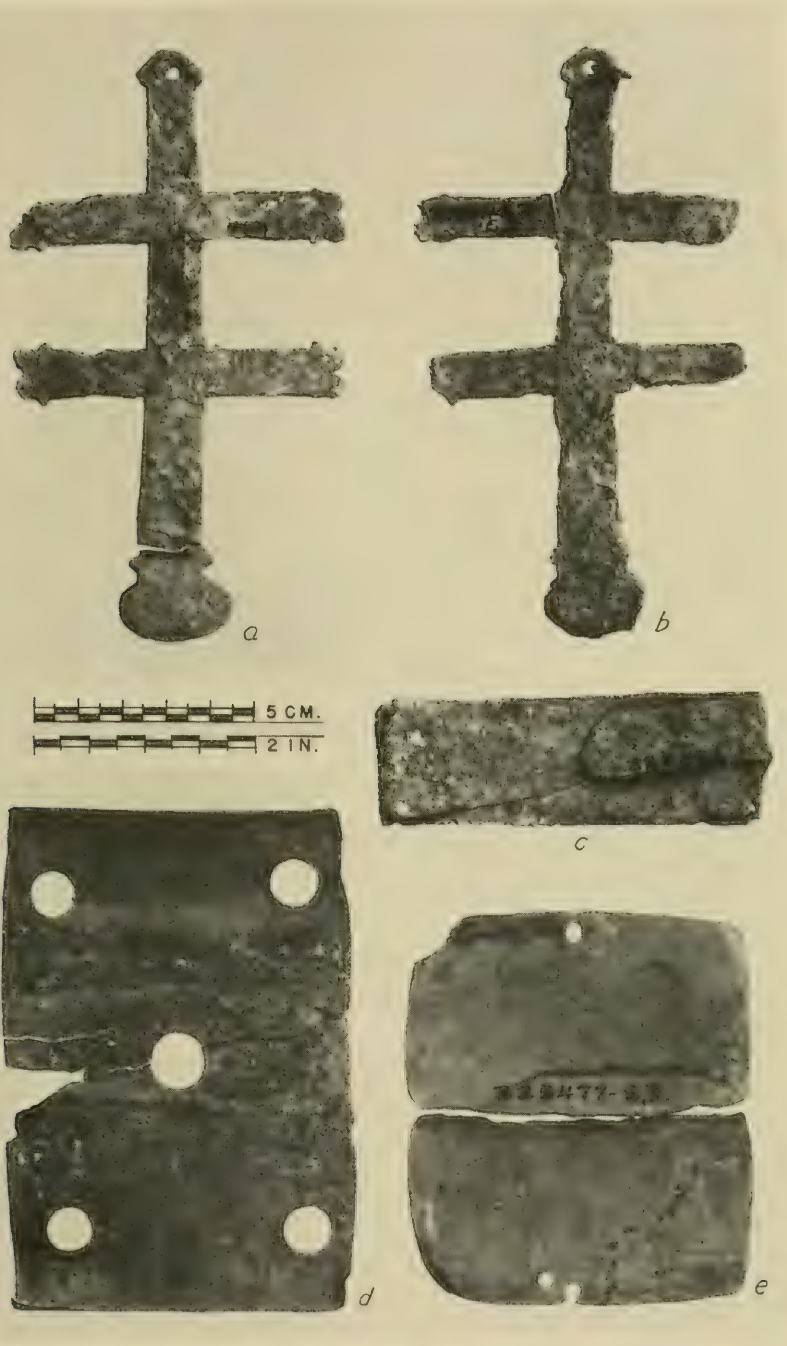
k

Miscellaneous trade metal objects from burial sites near Mobridge, S. Dak. (USNM Neg. 41513B.)


a
b
c
5 CM.
2 IN.
d
e
f
g
h
i

Miscellaneous trade metal objects from burial sites near Mobridge, S. Dak. (USNM Neg. 41514E.)



Trade metal objects from burial sites near Mobridge, S. Dak. (USNM Neg. 41514D.)

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The Original Strachey Vocabulary of the Virginia Indian Language

By JOHN P. HARRINGTON

265191—54——21

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THE ORIGINAL STRACHEY VOCABULARY OF THE VIRGINIA INDIAN LANGUAGE

By John P. Harrington

INTRODUCTION

It will be a matter of surprise to many people that the original manuscript by William Strachey, written probably about 1612, entitled "Historie of Travaile into Virginia Britannia . . .," terminated by the large vocabulary of the Virginia Indian language, the tongue spoken by Powhatan and Pocahontas, has lain at the Bodleian Library, Oxford, England, all these years and has never been published in full and correct form. A somewhat divergent copy, in the possession of the British Museum, was published by the Hakluyt Society in 1849, and this has taken away attention from the original. The present paper centers interest on the vocabulary which appears at the end of the Strachey manuscript at the Bodleian Library, and which fills 15 double-column sheets of legal size.

Little is known of the life of William Strachey beyond his being a "Gentleman of London," who sailed on his only voyage to Virginia in the summer of 1611 and was shipwrecked on one of the Bermuda Islands, yet reached the newly established colony of Jamestown, Va., later in the same year. He was Secretary of the Jamestown colony for part of 1611, all of 1612, and part of 1613, terminating his secretaryship in 1613 by returning to England. It is on record that a man who was perhaps the son of William Strachey emigrated to Virginia.

Strachey's Indian vocabulary was made—as a similar and much smaller one had been made by Capt. John Smith a few years before—in connection with the writing of a book on Virginia. While in the capacity of Secretary of the Jamestown colony, Strachey evidently interviewed one or more Indians and from them produced a vocabulary of some 800 entries; one of the best features of this vocabulary is that some of the words are written twice with different orthographies, thus hinting at what the pronunciation may have been. It is not known whether Strachey wrote his book in Virginia or in England, but the linguistic materials for it were certainly obtained in Virginia. The present facsimile edition of the vocabulary is published with the kind permission of the Director of the Bodleian Library, facsimile reproduction having been chosen so as to present the original forms to the reader, thereby eliminating as far as possible the element of error involved in transliteration. The Strachey vocabulary is by far the largest ever made of the now long extinct Virginia Indian language.

Strachey's work had been preceded by that of two other men. It was also followed by that of two other men who took down words from the lips of Virginia Indians. All other recordings appear to be secondary. Thus there are five records of source material in the Virginia Indian language. The recorders besides Strachey were White, Smith, a nameless recorder, and Dalrymple, Strachey occupying an intermediate chronological position, between Smith and the anonymous record maker. Brief accounts of the recorders follow:

1. White.—Sir Walter Raleigh sent first an exploratory expedition to what is now the coast of North Carolina before sending a colony. In 1584 Raleigh fitted out two vessels, one under the captainship of one Armidas, the other under the captainship of one Barlow, and sent them across the Atlantic Ocean to explore. The ships returned to England in September of the same year. In 1585 Raleigh sent a ship of colonists who settled on Roanoke Island, but returned to England with Drake in 1586. In 1587 Raleigh sent another ship with colonists to Roanoke Island. John White, who was a prominent "Gentleman of London" and friend of Raleigh's, and a natural-history artist, sailed on the voyage of 1587, and again on the voyage of 1590, when he was proclaimed governor. His watercolors of fishes and birds, accompanied to a large extent by Virginia Indian names, have come down to us, preserved at the British Museum. The Indian names comprise 37 in all; 17 of these are names of fishes and 20 are names of birds. An article about the White watercolors by Edward E. Hale (1860) gives White's animal names.

Roanoke Island is on the North Carolina coast, where it is sheltered by an outer chain of islands; it is separated from the mainland by Croatan Sound. Roanoke Island is 10 miles long by 3 miles wide. Just north of it is Albermarle Sound, into which flows the Roanoke River, rising in Virginia.

2. Smith.—Capt. John Smith was evidently with the Jamestown Colony from its foundation in 1607. His book published at Oxford in 1612, contains, prefaced to it, his famous vocabulary of the Virginia Indian language. He probably took down the vocabulary in 1608, the year in which he became head of the colony. The Virginia Indian words published by Smith are spelled entirely differently from those later recorded by Strachey. Smith's map has many names of places that have linguistic value.

3. Strachey.—Unlike the vocabulary by Smith, which was published about 4 years after it was recorded, that by Strachey was destined to lie long unpublished: its British Museum version being published 239 years after it was recorded, the present version still later.

4. Anonymous.—In a collection of the Lord's Prayer published in Livonia (Bergmann, 1789) there appears a Lord's Prayer version in the Virginia Indian language. Who did the recording, where it was done, and when are unknown. The source is not stated; surely it was not from White, Smith, or Strachey, but was probably subsequent to these.

5. Dalrymple.—In 1844 the Reverend Mr. Dalrymple, whose first name or initials are not known, took down a short vocabulary of the language of the Pamunkey Indians, in Virginia. A person writing under the initials "C. C." (1858, p. 182) published this vocabulary 14 years later. It consists of 17 words; last are the terms for the numerals 1 to 10 with the exception of the term for 9, which evidently could not be remembered. The words of this vocabulary almost without exception accord with the Virginia Indian language elsewhere on record, or with the Delaware language.

The Virginia Indian language recorded by Strachey and others is now known to belong to the Algonquian linguistic stock. W. R. Girard was the first to notice that it exhibits features which remind one of Cree, an Algonquian Indian language of eastern Canada. But actually the Virginia Indian language is merely a dialect of Delaware. Almost every word can be found in the standard dictionary of the so-called Delaware language (Brinton and Anthony, 1888). A paper has been published (Siebert, 1931, pp. 288–303) which shows that although the Virginia Indian language is like Cree in having *θk* and *xk* fall together to become *sk*, there is agreement of the Virginia language with several other Algonquian languages in that original *xp* appears as *hp*, while in Cree it becomes *sp*.

There existed, no doubt, dialects in the Virginia Indian language, but the extant material is entirely inadequate for determining the nature and extent of these.

The personal names "Powhatan" and "Pocahontas" do not appear as entries in the Strachey vocabulary. How the Indians pronounced these names is not known; however, certain interesting facts about each of the names can be worked out from sources. That Capt. John Smith's pronunciation had the accent on the last syllable of the name Powhatan is shown by a poem contained in one of Smith's books, a line of which reads: "Didst make proud Powhatan his ſubjects ſend." That the etymology of the name Powhatan is not "place of the waterfalls" is shown by Strachey's giving the name "Paquachowng" for the waterfalls at the upper end of the James River. This name sounds very different from the name Powhatan. It is recorded in Virginia history that the residence of Powhatan was on what is now called Mayo Hill, situated about a mile up the James River from Mayos Bridge; both of these places are in the city of Richmond, Va. The James River becomes choked with small islands at the vicinity, which is the head of navigation.

In the text of Strachey's manuscript, the name Pocahontas is stated to mean "the little wanton." The name is possibly to be connected with Strachey's "Pocohaac," awl, penis.

FACSIMILE REPRODUCTION OF THE STRACHEY VOCABULARY

Several of the entries of the Strachey vocabulary have ethnological as well as linguistic interest. Among these are one personal name, Nanamachavwk, the name of the Roanoke chief, and three place names: Chessiopiock, Chesapeake Bay; Paquachowng, the waterfalls at the end of the James River; Tſenakcommacah, Virginia.

Strachey's handwriting was peculiar to his contemporaries, and is to us still more so. It is very unfortunate that although the decipherment of the Indian words is so important, the reading of some of the letters is difficult and sometimes impossible with certainty. Strachey's handwriting, like that of his contemporaries, uses capital and small letter forms. On the whole, his capital letter forms are easier to read than his small ones. He makes two forms of capital *A*, one like the printed form, and one having the form of small *a*, which varies in tallness so that one cannot be certain what is intended for capital and what is not. Capital *C* has two forms: one like a circle with a Greek cross inside of it, and one like a small *c* made larger. Capital *F* also has two forms: one like the printed capital and one which looks like a doubled small *f*. Capital *T* has two forms: one like a printed capital *J*, and one like a capital *c* with a horizontal bar at its top. The small *a* sometimes looks like a small *u*. Small *i*, *m*, *n*, and *u* are especially hard to decipher. The "long ſ" occurs mostly between vowels and not finally in words, and small *n* and *u* are made much the same, very occasionally a macron being put over *n* to distinguish it from *u*. In the Strachey vocabulary, each new letter introduces two lists: an Indian-English list and an English-Indian list, except that *e*, *f*, and *g* have an English-Indian list only, whereas *q* and *z* have Indian-English only. The letters *j*, *u*, and *x* are lacking.

Together with the reproduction of the 16 sheets in facsimile that follow, 16 pages of transliteration into the current letter forms of today are given as keys to facilitate the reading. These are followed by a section of classified vocabulary, in which the words of related meaning are grouped together.

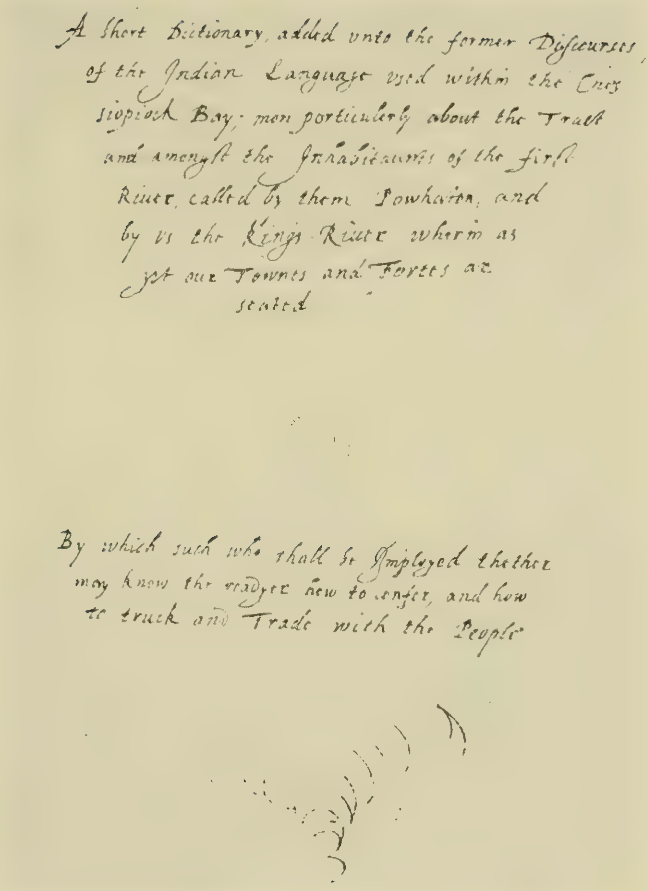
REPRODUCTION OF THE ORIGINAL STRACHEY VOCABULARY OF THE VIRGINIA INDIAN LANGUAGE WITH KEYS TO THE SHEETS

Key to sheet 1

(Title of the Strachey manuscript at the Bodleian Library consisting of the vocabulary)

A ſhort Dictionary, added unto the former Diſcourses of the Indian Language used within the Chessiopiock Bay; more particularly about the Tract and amongſt the Inhabitants of the firſt Riuer, called by them Powhatan, and by us the Kings Riuer wherein as yet our Townes and Fortes are seated.

By which such who ſhall be Imployed thither may know the readyer how to confer, and how to truck and Trade with the People.



A Short Dictionary, added vnto the former Discourses,
of the Indian Language vsed within the Ches
siopiock Bay, more particulerly about the Tract
and amongst the Jnhabitaunts of the first
Riuer, called by them Powhatan, and
by vs the Kings Riuer wherin as
yet our Townes and Fortes are
seated

By which such who shall be Imployed thether
may know the readyer how to enter, and how
to truck and Trade with the People

Sheet 1.

Key to sheet 2

A

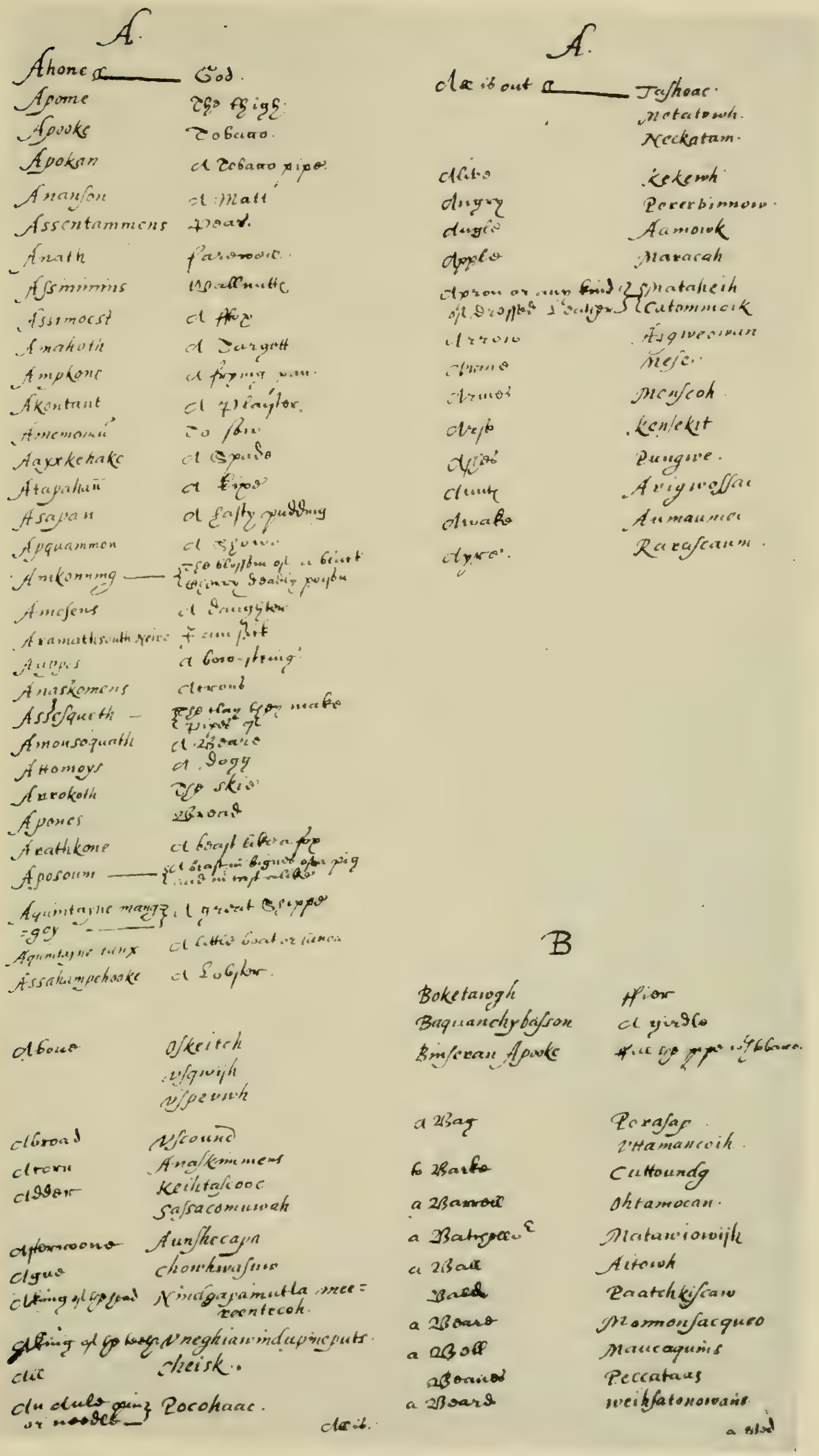
Ahone	God.
Apome	The thigh.
Apooke	Tobacco.
Apokan	a Tobacco pipe.
Ananſon	a Matt.
Assentammens	pear.
Anath	farewell.
Aſsinimins	Wallnutte.
Assimoest	a Fox.
Amahoth	a Targett.
Ampkone	a frying-pan
Akontant	a Playster.
Amemomú	To sew.
Aayxkehake	a Spade.
Atapahan̄	a kixe
Asapan	a hasty pudding
Apquammon	a Showe
Amkonnmg	The blossom of a black Cherry deadly poison
Amoſens	a daughter
Aramathsouth Neire	I am ssik
Auppes	a bow-string
Anaskomens	acrons
Asseſqueth	the clay they make Pipes of
Amonsoquath	a Beare
Attomoys	a dogg
Arrokoth	The skie.
Apones	Bread.
Arathkone	a beast like a fox.
Aposoum	a beast in bignes of a pig and in tast alike
Aquintayne mang-goy	a great Shippe
Aquintayne tanx	a little boat or canoa
Assahampehooke	a Lobster.
aboue	oſkeitch
	vſgwÿh
	vſpevwh
abroad	vſcound
adder	keihtaſcook
	Saſsacomawah.

A

acorn	Anaſkimmens.
afternoone	Aunſhecapa.
ague	chowhwaſuw
aking of the head	Nindgapamatte meereentecoh
aking of the teeth	vneghiawindupineputs
all	cheisk.
an aule pin or needle	Pocohaac.
all is out	Taſhoac.
	Metatewh
	Neckatum.
alive	Kekewh.
angry	Perervinnow.
angle	Aamowk.
apple	Maracah.
apron of any kind of dressed leather	Mataheih Catomoik
arrow	Asqweowan
arme	Meſe
armes	Menſcoh.
arse	Kenſekit.
ashes	Pungwe.
aunte	Ariqwoſſac.
awake	Aumaumec.
ayre	Raraſcaum.

B

Boketawgh	Fier.
Baqwanchybaſson	a girdle
Binſeran Appoke	Fill the pipe with tobacco
a Bag	Poraſap
	vttamancoih
to Barke	Cuttoundg
a Barrell	Ohtamocan
a Batchellor	Matawiowijh
a Ball	Aitowh
Bald	Paatchkiſcaw
a Beare	Monnonſacqueo
a Bell	Maucaquins
Beanes	Peccataas
a Beard	weihſatonowans



A.

Ahone a ———	God.
Apome	The thigh
Apooke	Tobacco.
Apokan	A Tobacco pipe.
Ananſon	A Matt
Aſsentammens	Pease.
Anath	farewell.
Aſsminnins	Wallnutts
Aſsimoest	A fox
Amahoth	A Targett
Ampkone	A frying pan.
Akontant	A Playtor.
Amenome	To sow
Aaxkehake	A Spade
Atapahan	A [illegible]
Asapan	A hasty pudding
Apquammon	A shoe
Amkonning ——	the blossom of a black weeny deadly poyson
Ameſens	A daughter
Aramathsouth Neire	I am sick
Auppes	A bow-string
Anaskomens	Acorns
Aſsesqueth —	The clay they make pipes of
Amonsoquath	A Beare
Attomoys	A dogg
Anrokoth	The skie
Apones	Bread
Aeathkone	A beast like a fox
Aposoum ——	A beast in bignes of a pig and in tast alike
Aquintayne manggoy ——	A great Shippe
Aquintayne taux	A little boat or canoa
Assahampehooke	A Lobster.
Aboue	Oſkeitch vſqwiſh vſpewh
Abroad	Nſcound
Acorn	Anaſkimmens
Adder	Keihtaſcooc Saſsacomuwah
Afternoone	Aunſhecapa
Ague	chowhwaſuw
A king of the sea	Nindgaſamutla mee=roentecoh.
A king of the wood	Vneghiawindupincputs.
All	cheisk.
An Aule graving or needle —	Pocohaac.

Ax.

A.

Ax is out a ———	Taſhoac. Metatowh. Neckatam.
Aliue	kekewh
Angry	Pecerbinnow.
Angle	Aamowk
Apple	Maracah
Apron or any kind of dressed leather	Matahcih Catommoik
Arrow	Asgweowan
Arme	Meſe.
Armes	Menſcoh.
Arſe	Kenſekit
Aſhes	Pungwe.
Aunt	Arigwoſsac
Awake	Aumaumec
Ayre.	Rarascaum.

B

Boketawgh	fier
Baquanchybaſson	A girdle
Bmſexan Apooke	fill the pipe with tobacco.
a Bag	Poraſap vttamancoik.
to Barke	Cuttoundg
a Barrell	Ohtamocan.
a [illegible]	Matawiowijk
a Ball	Aitowh
Bald	Paatchkiſcaw
a Beard	Mowmonſacqueo
a Bell	Maucaquins
Beanes	Peccataas
a Beard	weihſatonowans

a Bird

Sheet 2.

B	
a Bed	Cawwaivuh Petaocawin
to Beat out wth a Cudgell	~~Vshvuchomen~~ Auntemdum Nooūeſhetum
to Bear Corne into meale	vshuccohomen
to Beat any Iron to an edge	vtssetecuttawſuw
to Bend	Accongaivwh
Before	vtcharond
not to Bend	Sansagwaivwh
Behind	Tanagogwaÿk
Below	Nouſvmon
Beneath	vtshemaÿn
a Begger	Cuttaſsamais
Better	wingutſcaho
a Bird	Tſhehip Tſhetchenidg
a smale Bird or Chicken	Cawacheims
a Bird wth carnation colloured wings	Ahshowcutleis
A Bird like a Lapwing collour gray w^{ch} useth the water	Nonahamshaw
a Bird called a Divedapper	Oſaſianticus
the Bill or Beake	Mehkewh
to Bite	Amm Nuſsacom
a Bitch	vſquauſum
Black	Mahcatawaiuwh
Blew	oſaih
to Blow any thing	Nepotatamen
Blew beades	vmetagwuſhowon
Blew berries of the bignes of grapes very pleasant	Accoondews
Blunt	wÿhwaivwh
to make any thing Blunt	Neihpunſannuwh
Block	Taccahoac
Blynd	Nehpaangvnnū
a Bow	Auhtab
a Bow-string	Aupeis

B	
a Boat	Aomataū
a Bottle	Paheewh
a Board	Cutſsotahwooc
to Boile up	Potopotauktawk
a Bone	wuſkan
a Boye	vſcapess
a Box at wch they play at a certayne kind of Game	Assowpoon
the Bobb of the Ginnye wheat w/out Corne	okiſher okinſher
Bread	Appoans
Bread made of a wote called	Taccahoappoans[1]
a Braszer	Qwunnumſe
a Bridge	Metucs
to Broyle or toast bread	Apetawh poan
to Break a stick	vnchgucheis caumelmuſhe
to Break wth one fingers any thing	vdeſmamum
to Break wth striking on any thing	Paſkeaw vdeastahamū
to Break all in piece	ketarowkſumah
to Be broken or crackt	Perew
Bright or plaine all over	Muſcauſsum
to Bring into the Boat	Paakſetowec
to Bring againe	Patow
Brasse	Oſawas
to bruyse any thing small	vnetawvunum
a Brother	Nemat
a Brush	vnepawahumma
a Bramble or briar	Cawmdgus
a Broome	Tſhekehicawwons
a Butterfly	Manaang-gwas
to Burne as if a sparke light on any	Cutchow Matowram
a Bunch of Grapes	Metucsmarakimins

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[1] The first mention of tuckahoe bread. With -poans compare the second word of "corn pone."

B.

a Bed	Cawwaivwh Petaocawin
to Beat one with a cudgell	~~[illegible]~~ Auntamdum Nooueſhetum
to Beat corne into meale	Vſhuccohomen
to Beat any thing to an edge	Vtssetecuttawſuw
to Bend	Accongaivwh
Before	Vtchuxond
not to Bend	Sansagwaivwh
Behind	Tanagoqwaijk
Below	Nouſomon
Beneath	ytshemayn
a Begger	Cuttaſſamais
Better	wingutſeiho
a Bird	Tſhehip
a small Bird or Chicken	Tſhetchenidg Cawaiicheins
a Bird with carnation colloured wings	Ahshowcutteis
a Bird like a lapwinge colloure gray that keeps the water	Monahamshaw
a Bird called a dindapper	Oſaſianticus
the Bill or Beake	Mehkewh
to Bite	Amon Nuſſacom
a Bitch	Vſqwauſum
Black	Mahcatawaiuwh
Blew	Oſaih
to Blow any thing	Nepotatamen
Blew beades	Vnetagwuſhowon
Blew berries of the bignes of grapes very pleasant	Aucoondews
Blunt	wyhwaiowh
to make any thing Blunt	Neihpunſamowh
Block	Taccahoac
Blind	Nehpaangonnū
a Bow	Auhtab
a Bow-string	Aupeis
a Boat	Aomtaū
a Bottle	Paheewh
a Board	Cutſſotahwooc
to Boile by	Potopotawhtawh
a Bone	Wouſkan
a Boye	Vſcapess
a Box with which they play at a certaine kind of Game	Aſſowpoon

By

B

the Bobb of the Ginnye wheat when Corne	okiſher okinſher
Bread	Appoans
Bread made of a roote called	Taccahoappoans
a Brayse	Qwunnumqc
a Bridge	Metucs
to Broyle or tost bread	Apetawh poan
to Break a stick	vnchgucheis caumelmuſhe
to Break with one finger any thing	Vdeſmamun
to Breake with strikeing on any thing	Paſkeaw vdiſtahamū
to Breake all in pieces	Ketarowkumah
to be broken or crackt	Pesew
Bright or plaine all over	Muſcauſum
to Bring into the Boat	Paakſetowce
to Bring againe	Patow
Bristle	Oſaiwas
to bruse any thing small	Vnetawunnum
a Brother	Nemat
a Brush	Vnepawahumma
a Bramble or brier	Cawindgus
a Broome	Tſhekehicawioons
a Butterfly	Manaang-qwas
to Burne as if a sparke light on any	cutchow Matowran
a Bunch of Grapes	Metucsmarakimins.

Chamange

C

Chamange	a Tobacco bagg
Chapant	a Shewe
Curcye neire	I am a cold
Commotins	a Turtle
Cheawanta	a Robin red brest
Cuvſmc	Sister
Chippſni	Land or earth
Chichiquamins	a kind of grayne to eat
Camatnige	6 in nomber
Chakaſowe	a Crack in any thing
Cucheneppo	a woman
Cvenepo	a woman
Cheskchamay	All freinds
Ceader	naraak
Calme	Cohqwaivwh
to Call on one	Otaſsapuax
a Canoa or small boat	Aquointan
a Can or any such like thing to drinke in	ohtamocan
a Candle or gummy stick w^{ch} will keepe Light	Oſamintak
a Cap or hatt	Puttaiquapiſson
to Carry a thing up and downe	Nowwicwaſhim
to Carry a thing betweene twoo	Necuſoagwus
to Carry upon̄ ones showlder	Ahcokin̄emun
to Catch in the mouth as dogs doe	Onaſcandonien Opaſſontamen
a Cat or wild beast much bigger and spotted black und^{r} the belly as a Luzarne	Vtchoonggwai
Caviare or the Ro of Sturgeon	Woock
to Chaw	Tawhtagwonntamen
Cheine	Rarenaw
a Chaine of Copper with long linkes	Tapaantaminais
Chesnuts	Opommins
Cheese or any curded matter made from milk	Ootun
a Chamber	vtshecommuc
a Child	Neckaun
a Chest	Pacus
a Chicken	Cawahcheims
to Chop wood	Catchcahamun muſhe

C

a Circle	Muſsetagwaioh
a Civet Cat	Attownin
Clay	Puſsagwun
to Clap ones handes	Paſsahicaan
the Claw of a Crab	Ohtindge
to Clense a pipe	Jacutteahwoon
to Clense the ground and make yt fitt for seed	Monaſcunnemun̄
to Cleave or hold fast to a thing	Auputchahgwctone
to Clymb a tree	Ahcouſhi
the Clowds	Mammaū Arrahgwotuwh
to take hold of any thing	Mammun
Copper	Mataſsan̄
a Comb	Reihcoun
Cold	Nonſsamats
a Cord or small lyne or a thread	Pemanataon
a Coat of plate	Agwahvſsum
a Coat ierkin dublet or ells what	Mantchoor
to Come being spooken familiarly or hard by	Camerowath Caameic Caumear ah
to Come being spoken a far off to one	Pÿak Pyarowah Pyarah
to Come in	Peintiker
to Come againe or we will come againe	Oiacpÿam Naantuc-ah pyautch
to Come quicklye	vſkepÿah Vſkepewh
to Come up	Vtacqwowsun
to Come downe	Neighſawſun
to Coffe	Nuſſuccum
the Cock Crowes	Momnawentſecam̄o
a Covering or mantle made of feathers	Puttawus
a Covering to lay upon out	Cawaſsun
a Cod fish	ouhshawkowh Vttacomuck
a Cockle	Oſakeſcai
to Cover one	Ahgwur
a Cob-web	Nuttaſsapec
a Cookold	wimpenton
a Copper kettle	Aucutgagwaſsun
a Crab	Tuttaſcuk
a Crane	Vſsac
a Crack, or Crackt	Paſkaſew Tatumſew
a Creek	Meihsutteraſk
a Crowne or oft dears haire died red	Cutaantaqwapiſsun
a Crow	Ohawas

C.

Chamange	a Tobacco bagg
Chapant	a Shrew
Cuscye neire	I am a cold
Commotins	a Turtle.
Cheawanta	a Robin red brest
Cuusme	Sister
Chippsni	land or earth
Chechiquamins	a kind of grayne bush
Comatinge	6. in number
Chakasowe	a Crack in any thing
Cuchenepo	a Woman
Crenepo	a woman
Chesk chamay	All friends

Cedar	Maraak
Cabin	Cohqwaiouh
to Call on one	Olassapiiac
a Canoa or small boat	Aqwointan
a Can or any such like thing to drink in	Ohtamocan
a Candle or gummy stick which will burn light	Osamintak
a Cap or hatt	Puttaiqwapisson
to Carry a thing up and downe	Norowwiewaskim.
to Carry a thing elsewhere	Neeussuqinus
to Carry upon one's shoulders	Ahcohkimemun
to Catch in the mouth as dogs do	Ouacandumen Crussontamen
a Cat or wild beast much bigger and spotted black under the belly as a Luzarne	Utchoonggwai
Caviare or the Roe of sturgeon	Nuocock
to Chaw	Tuuhtag vourtamen
Chynne	Katenau
a Chayne of Copper with long linkes	Tapaantaminais
Chestnuts	Opommins
Cheese or any curded matter made of milke	Ootun
a Chamber	Utshecommuc
a Child	Nechaun
a Chest	Pacus
a Chicken	Cawahchems
to Chop wood	Catchcahamun mushe
a Circle	Mussetagwaioh
a Cittel Coat	Attowrin
Clay	Pussagwun

to clap

C

to Clap one's hands	Paſsakunaar.
the Claw of a Crab	Ohtindge
to Cleanse a pipe	Jacutteakwon
to Cleanse the ground and make it fitt for seed	Monascunnemun
to Cleave or stick fast to a thing	Auputchahqwetow
to Climb a tree	Ahcoushe.
the Clouds	Mammaū Krahqivetuwh
to Clutch hold of any thing	Numman
Copper	Matassun
a Coal	Reihcoun
Cold	Nonsamats
a Cord or small line or thread	Pemanataon
a Coat of plate	Aqwahussum
a Coat Jerkin Dub:let or the like	Mantchoor
to Come being spoken familiarly or hard by	Camerowath Caumeir Caumear ah
to Come being spoken afar off to one	Pyjah Pyarowuh Pyarah
to Come in	Pemtiker
to Come againe or we will come againe	Vtacpyjam Naantucah pyautch
to Come quickly	Vskepyjah Vskepewh
to Come up	Vtacqwowsun
to Come downe	Neighsauhor
to Cough	Kaſuccum
the Cock crowes	Mommaneutscamo
a Covering or mantle made of feathers	Puttawus
a Covering to lay upon one	Cawassun
a Cod fish	Ouhshawkowh Vttacomuk
a Cockle	Usakesai
to Cover one	Ahqwoue
a Cob-web	Nuttaysapec
a Cookold	Wompenton
a Copper kettle	Aucutgagwussun
a Crabb	Tuttascuk
a Crane	Usac
a Crack or crumble	Paskasew Tatumsew
a Creek	Meihsutterask
a ~~Dorne~~ Crowne or of Deares haire died red	Cutaantaqwapissun
a Crow	Ohawas

[illegible]

Sheet 4.

Key to sheet 5

C

Crooked	okhorime
to Cry	Neighſeum
to Cut the haire of a mans head	Moundg Numinundgum
	Cummundgum
to Cut any thing	Vnekiſhemun
Curled haire	Vtchepetaiuwk
	Arorewhmerersk
a womans Secret	Muttusk Mucoſӯt

D

Dawba on quire	Warme yo^{r}ſelf
a day	Cuttepacus Raioawk
dark	Pahcunnaioh
I dare not	Necgwu saw Negutahke
a deare	Vttapantam
dead or to be dead	Tſepaih
deipe to the middle	Tſaqwomoi
deepe ou^{r} the head	Nuttahcaam
deafe	Cuppotaiv
to divide a thing in half	Rickewh
the devill	Riapoke
a dish	Outacan
to dive	Poohkewh
a dot	Noungut
a dog	Attemous
doe so	Vtſeneind
to drink to one	Vnaucopen or Kakopen
I would drink	Vgaucopeſsan
to dry any be fier or otherwise	Tſetewh Gaukenates
to be dry or thirsty	Paougwuſsentlawk
to dresse or pitch a boat	Ascahamun
a drum	Ahqwohhooc
a duck	Piſcoend
dust	Nepenſun
dyrt	Keſshackaivwh
to dwell	Nahapuc
a red dye	Pohcoons Mataqwiwun

E

the Eare of a man̄	Meihtawk
the Eares of a hare or any other beast	weihtaws Mechün
to Eate	Mecher
I will eate	Nummechӯn
I'le eate by & by	Mechocuſk
Eate wth me	Meihtuſsur
the Earth	Aſpamun Ottawm
the East	Vtchepwoiſſonna
an Eagle	Opatenaiok
an Eare of wheat	Autowtaoh
an Eare of new wheat	Maucatanatſomcor
Ebbing water	Seiſcatuwh
an Eele	Aſcamuuk
an egg	wovwh
an Elboe	Meiſquañ
E[l]der	Nuſsaandg
the Element	Poomy Arrathqwaturoh
Enemy or naught	Macherew
	Marapo
Enough	wamat
	Neimbat
Entombing	Paianiaſum
the Eye	Muſkiendguk
the Eyes	Muſkiendgues

F

Farewell, or the word at parting	Anah
the Face	Vſcaentur
the Fall of the leaf or the Automn	Punſaos
the Fall	Ammawſkm
	vdamom
	vdamoſun
to be like to fall	Caweſewh
to Fall downe from a tree	Raqwa sewh muſhe
to lett any thing fall	Vtamocahken
the Falls at the upper end of the Kings river	Paquachowng

C

Crooked	~~Ohhawat~~ ohhorime.
to Cry	Neighseum
to cut the haire of a man's head	Moundg Numinundgum Cummundgum
to cut any thing	[illegible]nekishemun
Curled haire	Utchepetaiuwh Aroreuhmeroosk
a woman's Cornet	Muttusk Muccosqt

D

Dawbason quire	warme the selfe.
a day	Cuttejacus Kaiōawk
darke	Pahcunnaioh
I dare not	Neeyiwnysaw Nequtānke
a doore	Uttapantam
dead or to be dead	Tsepaih
deepe to the middle	Taqwomei
deepe over the head	Nuttahcaum
deafe	Cuppotaw
to devide a thing in halfe	Kicksiwh
the devill	Riapoke
a dish	Outacan
to dive	Pooshkewh
a doe	Noungut
a dog	Attemous
doe it	Ursseneind
to drink to one	Unaucopen or Kakopen
I would drink	Ugaucoressun
to dry any by fire or otherwise	Tsetewh Gaukenates
to be dry or thirsty	Paougwussentawk
to drawe or pull a boat	Ascahamun
a drum	Ahqwohhooc
a duck	Pisecend
dust	Nepensun
dyrt	Kesshackaiuwh
to dwell	Nahapuc
a red dye	Pohcoons. Mataqwiwun.

the

E.

the Eare of a man	Meihtawk
the Eares of a hare or any other beast	weihtaws Mechün
to Eate	Mecher
I will eate	Nummechijn
I'le eate by and by	Mechocusk
Eate with me	Meihtussur
the Earth	Asspamun Ottawom
the East	Utchepwoissunna
an Eagle	Opateraiok
an Eare of wheat	Autowtash
an Eare of new wheat	Maucatawatsomess
Ebbing water	Seiscatuwh
an Eele	Ascamunk
an egg	wouwh
an Elboe	Meisquan
Elder	Nussaandg
the Element	Poemp Arrath=qwaturoh.
Enemy or naught	Machcrew Mowapo
Enough	wamat Nembat
Entombing	Paiamasum
the Eye	Muskiendguk
the Eyes	Muskiendgues

F.

Farewell or the word at parting	~~Ascaentur~~ Anah
the Face	Ascaentur
the Fall of the leafe or the Autumne	Punsaos
the Flesh	Ammaiosken Udamom Udamesun
to be like to fall	Cauwesewh
to fall downe from a tree	Raqwassewh mushe
to lett any thing fall	Utamocahken
the Falls at the upper end of the Kings river	Paquachowng

to be faint

Key to sheet 6

F

to be First	Nettencrianges Nummamuntam
a Father	Nows
a Faune	Monattecow
Fatt	wiroakawh
a Fart	Poket
a long Feather	Meqwance
Feathers	Ahpewk
the feathers of an arrowe	Assaconcawh
Feet of a hawke	Oreingeis
Feet by a generall name	Meſsets
to Feed wth a spoone	Accoqaatamun
to Fetch some Fier	Meſhpataan bocotaoh
Fish	Nammais
a Fishhooke	Auketuttawh
a small Fish as big as a Woach	wmamaik
the Fingers	Meteingeies
the Fore finger	Nummeiſutteingwah
the long Finger	Nuttawwutteindg
the ring Finger	Nomgweitut
the little Finger	Nummeiſutteidg
to Fill some tobacco	Binseram Apook
Filthy	Moich Moiowatt
the Fins of a Fish	wÿhcats
a fight at fisticuffes	Nummecaxuttenar
a fine or small thread	vſcook
the Flame	Catzahanzamuſheis
Flowing water	Tammuſcamcuwh
the Flower of the apple Maracah	Tſemahcang
a Flower of a fine thing	Muſkaiuwh
to Fly	Awaſsew Paugweuwh
a Fly	Mowchesoh
Flap	Tſhehaoah
a Flea	Nuttagwon
to Flea any thing	Paſhenaan
a Flying Squirrell	Aioſsapanÿk
a Fly	Mowchesoh
a Fowle in likenes of a footed wth a sharpe beak	Tſhoegetewh
a Fowle like a teale wth a sharp bill like a blackbird	ceumeats

F

a water Fowle in bignes of a duck fine coloured wth a Coppit crown	meihteams
a Fooll	wintuc wintuttum
Froth	Peihtoah
Frost	Tacquacat
a Friend or the principall word of kindnes	Netah
my Foot is well	wingan outſsemetſumneir
the Furre of the Beast Arrathcune	weſscanoc
I am Full	Negeiſp
to be Full	Geiſpun
Fier	Bocuttaow
a Cole of Fier	Mahcatois
a spark of Fire	Accecow Pahqwarra
to make a fier	Socaqwinchemmum Neusakagwan
the Fier is out	Otawiaac Bocotow

G

a Garden or plot of ground to sow corne	Oronacah
a Garter	Kiſpurracautupus
a Gate	Cuppanawk
a Garfish	Tatamaho
Give yt me or let me see it	Tangoa
to Give	Paatch-ah Paſemeh
Give me some Tobacco	Paſeme vppook
Give me some water	Mammahe ſucqwa
Give me some meat	Meiſhuah-mechen
Give me some butter or fat to spread on my bread	Paatchnatinungan vdamuſcan
Give this to the Child	Meiſh miroan cheſſoyowk
Give yt him	Cummeiſh yoowah
a Girdle	Nepogwaanſhepiſsun

F

to be afraid	Nettencrianges Nummamuntam
a father	Nows
a fawne	Nconattecoh.
flatt	Wirroakawh.
a fart	Poket
a long feather	Meqwanoc
feathers	Ahpewk
the feathers of an arrowe —	Assaconcawh
ffeet of a fowle	Creingeis
feet by a generall name —	Messets.
to feed with a spoone	Accopaatamun
to fetch some fire	Meſhpataan Bocotaot
fish	Nammais
a fishhooke	Auketuttawh
a small fish as big as a sprat.	Iumamaik
the fingers	Meteingeies
the fore-finger	Nummeiſutteingwah
the long finger	Nattumwuttemdy
the ring finger	Nomgweitut
the little finger	Nummaiſutteidg
to fill some tobacco	Bruſerani Apook
filthy	Moich Moiowatt
the finne of a fish	wiſhcats
a fight at fisticuffes	Nummeiaxattenew
a fine or small thread	Wſcook
the flame	Catzahanzamuſheis
flowing water	Tammuſcameuwh
the flower of the apple Maracah.	Tſemahcang
a flower of a fine thing	Muſkaiuwh
to fly	Awaſsew Paugwenwh
a fly	Mowchesoh
flax	Tſhehuoah
a flea	Nuttaqwon.
to flea any thing	Paſhenaan.
a flying squirrell	Aicſsapanijk
a flie	Mowchesoh
a fowle in bignes of a footed with a large bill.	Tſhoegetewh
a fowle like a woodcocke with a sharp bill like a black-bird —	Ccumeats.

a water

F

a water fowle in bignes of a duck finely coloured with a copped crowne	Meihteams
a foxe	wnttue wonituccum
frogg	Peihtoah
frost	Tack Tacqwacat
a friend or the principall word of kindnes —	Netah
my foot is sore	wingan outſse= :nietſumner
the furre of the beast Arrathcune	weſsaca noc
I am full	Kigeiſs
to be full	Geiſspun
fire	Bocuttaow
a cole of fire	Mahcatois
a sparke of fire	Acceeow Pahqwarra
to make a fire	Socaqwonchemnum. Neusakaqwan
the fire is out	Otawiaac Bocuton

G

a Garden or plot of ground to sowe corne	Oronacah.
a Garter	Kiſspurracautapus
a Gate	Cuppenauk
a Garfish	Tatamaho
Give it me or let me see it	Tangoa
to Give	Paatch-ah Paſimeh
Give me some tobacco —	Paſime uppook
Give me some water	Mainmahe ſucqwa.
Give me some meat —	Meiſhnah mechez
Give me some butter or fatt to spread on my bread —	Paatchnati vungan vdamunſcan.
Give this to the child —	Meeſh mitoan cheſsoyouk.
Give it him	Cummeiſh yoowak.
a Girdle	Nepogwaanſhepiſsun.

Sheet 6.

G

the Girth or leather the [sic] girde their middle	maaugwaoap
a Girle	vſquaſeins
Girles	vſquaſenis
the Gills of a sturgeon or any other Fish	Woſkeqwus
Glew or gum̄ that fasteneth on their arrow-heads	Vppeinſaman
a Glove	Otemgas
Glorious, smooth or beautifull	Muſcaivwh wmgaivwh
a Gnat	Poengwus
Good	wingan
not good or naught or sower	Macherewh Keſhemaok, chewwennowh, Atchetowh.
It is good meat	Necoondamen̄
to goe	Ireh
	Paspeen̄
to goe abroad	Ireh vſcoend
to goe along	Cawcawmear
	Aſcamanee
to goe downe	Ireh cuppemtanaan
to goe in	Vſcomtain
to goe softly	Vdaſemeodaan
to goe home	nummacha
to goe before	Nepopawmin
to goe after	Apahhamundg
now lets goe together	Caumenaun Cowichawwotun
the ships goes [sic] home	vpponſhun̄ muſhowc
gone	macntchatemayoac
not goe up	kekenohaivmh vſpenh
God	rawottonemd
a Goose	Kahanqoc
a Goosling	Marahungoc
Good morrow, or the word of salutation	Kencuttemaun
the Ground	Pttawin
to grow high	Atſetuns
	Cutterewh
the grisle of a strugeon	Vſocan̄
Grasse	Mehteqweins
Grapes	Marakimmins
a Grapes stone or the stone of any plumb	onacaugs caunomel

G

a Grayue or Crotch	Raſswocatuwh
a Grashopper	Tatacaunſhewah
a Grave	ourcar
a ground-nut	ouhpunnawk
a great-deale	Moowehick
a great waie	Amaiunk
	Netasoon
Gynny wheat	Pacuſſac
the Gum̄ that yssueth out of a certaine tree called the Virginia maple	Pickewh
the Gutts of any thing	Otakeiſheheis
a Gull	coiahgwus
a Gust of horrocado	Tohtummocunuum

H

Hauguequins	a little stone pot
Hawkone	a Ladle
Huſque	by and by or quickly
Hawtoppe	a bow
Huſquiguenatora	now I understand you
Huſkpemmo Poketawes	to sow wheat
Howh weih takon neire	I am hungry
Hawtorinkanuſke	a black fox skin or an overgrown sables
a Hare	wÿheutteis
the haire of the head	Mexerſe
the haire of a deare	Vſhegwunnuih
hard by	yowhſe
Hard	Eſepannawh
a Hand	Meihtinge
to Hang out	Wawapunnah
a Hatchet	Taccahacan
	Tamahaac
an Indian hatchet	Cunſenagwus
to haue	Nohainwh
I have bene	Near Nowwan̄
a Hawthorne berry	
a Hazell nut	Paangahtumuns
the head of arrow that is round	Aſſamowh
the head of an arrow	Raputtak
the head-ake	Kawmclirppaan
Heaven̄	Mounſhagwatowh

G

the Girth or Leather the girdle upon the middle	Maangwaoap.
a Girle	Usqueisenis.
Girles	Usqueasenis oc
the Gill of a sturgeon or any other fish	Woskeqwus
Glew or gum that fastens on their arrow-heads	Uppeinsaman.
a Glove	Otemqus
Glorious, smooth or beautifull	Muscaiwh wingaiwh.
a Gnat	Poengwus
Good	Wingan
not good or naught or sower	Macherewh Kishe= =mack. chemmen= =nomm. ttchetewh.
It is good meat	Necwondamen
to goe	Yreeth Passpe
to goe abroad	Yrth usseend
to goe along	Cawcawmear Ascamaner
to goe downe	Yreth uppemtanaan
to goe in	Usseintam
to goe softly	Vrasemedaun
to goe home	nummacha
to goe before	Nepepawmin
to goe after	Aspahhamundg
goe let us goe together	Caumenann Cowichawwotun.
the ships goe home	Vpposhun mu'howe
gone	Maentchatemayoac
not gone up	Kekenohaiumh uspenh
God	Rawottenemd
a Goose	Kahungoc
a Goosling	Nawihungoc
Good morrow, or the word of salutation	Kencuttemaum
the Ground	Pttacom
to grow fatt	Atsetuns Cutterewh
the gristle of a sturgeon	Usocan
Grasse	Mehteywems
Grapes	Marakimmins
a Grape stone or the stone of any plumb	Macangs caunomel
a Grayne or Groty	Rassewocatewh
a Grasshopper	Tatacaunshewak

a grave

a Grave	Curcar
a ground-nut	Onhpunnawk
a great-Scale	Moowchick
a great wind	Amunnwh Yetasoen
Greene wheat	Pacussacan
the Gum that issues out of a certaine tree called the Virginia maple	Pickewh
the Gutts of any thing	Otakeishehers
a Gull	Coiahqwus
a Gust or hurricado	Tohtummocunnum.

H.

Hauguequins	a little stone pot
Hamkone	a ladle
Husque	by and by or quickly.
Hawtoppe	a bow
Heiqui quenatora	now I understand you
Huskpemmo Poketawes	to sow wheat
Howh weih takon neire	I am hungry
Hawtorimkanuske	a black fox skinn or an overgrown Rabbit
a Hare	Wijcutteis
the haire of the head	Mexerse
the haire of a beare	Usheqwunmuih
hard by	Yowhse
Hard	Essepammawh
a hand	Nechtnige
to hang out	Wawatunnah
a Hatchet	Taccahacan Tamahaac
an Indian hatchet	Cunsenagwus
to have	Nohaiuwh
I have none	Near Nowwan
a haythorne berry	
a hazell nut	Pawahtamins
the head of an arrow that is round	Assamuwh
the head of an arrow	Raputtak
the head-ake	Kawmchippaan
heaven	Mounshaqwatowh

to heare.

H

to Heare	Nowwuntamen
not to heare	Mata nowwontamen
He	yoowah
Hemp	weihkippeis
Hell	popogwvſsur
He hath not or none	Tah-mocaſewh
The height of any thing at a good groth	Mangeker
Of a little height	Tangaſvw
Hearing	Aumpſvwk
to hide or cover from the rayne	Cuſhe
a Hill of small mount	Romutton
a Hill or mountaine	Pomotawh
Hidden̄ und^r a Cloud or over cast	Reihcahahcoik
a Howse	yohacan
a great howse	Machacammac
a husband	wiowah
a hole	woor
to make a hole	Mhocacotamen
a great hole	Maangairagwatonu
the hornes of a deare	wawirak
Hold yt aside	Hatacqwoear
Hot weather	Onoſhawocanaſsup
how manie	Keis
hungry	Noiateiwk
the Husk of their wheat	Pocuntavhca
a hurt or Cut	wapewh
to hurt, or a thing hurts me	Ahkeÿ vwwaap
It hurts my legge or my leggs ake	Vncgapamuttamen netatakÿ
It hurts me not or it is hole or well	Mamoindgakÿ Potteracai

I

Ire assuminge	Goe & run quickly
Ioughqueme wath	Let us goe or come away
Iake san̄ apooke	Light tobacco
I myself	Near
I or you	Nim
the Iaggs of h^e salvage habite	Raſsawans
Ice	oreih

I

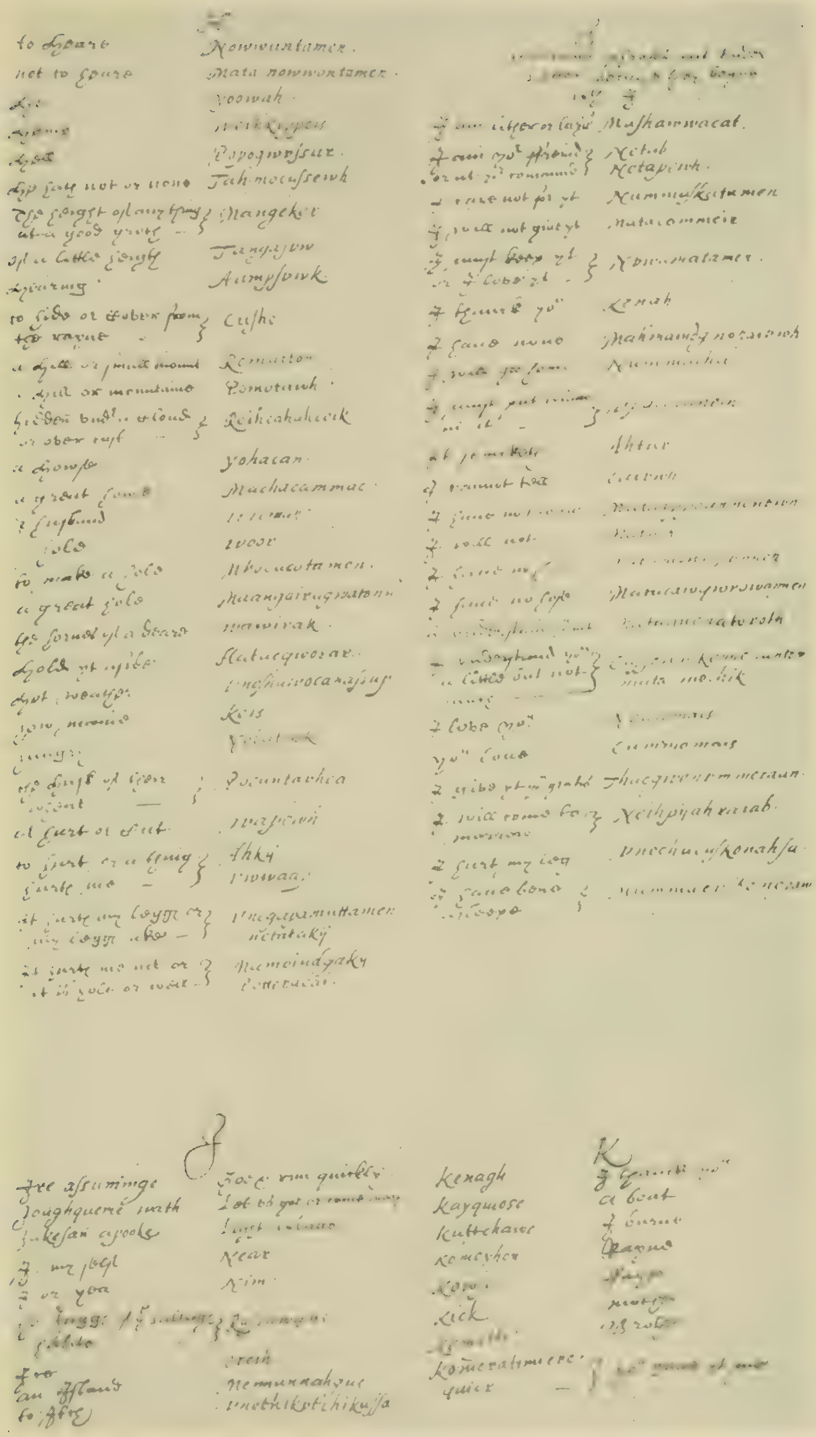
an Island	Mennunahgue
to Itch	Vnethikvtchikuſſa

Certaine phrases put under Letter because they begin with I.

I am lither or lazie	Maſhawwacat
I am yo^r Friend or at yo^r comaund	Netah Netapewh
I care not for yt	Nummaſksitamen
I will not give yt	Matacommeir
I must keep yt or I love yt	Nowamatamen
I thank yu^u	Kenah
I have none	Mahmanidgnohaivwh
I will goe home	Nummacha
I must put tobacco in it	Vpacocaheih
It stinketh	Ahtur
I cannot tell	cairwh
I have no tobacco	Mata vppoan nonvwh
I will not	Matuſh
I have no hooes	Matamawcasunneh
I have no hose	Matacawqwrowanneh
I understand yo^u not	Matagucnavoroth
I understand yo^u a little but not much	Cuſſewh kenneaunten mata mechik
I love yo^u	Nouwmais
yo^u loue	Cummomais
I give yt yo^u gratis	Thacgwenvmmeraun
I will come to morrow	Neihpÿahracas
I hurt my Leg	vnechacuſhonahſa
I have bene asleepe	Mummacuſhenepaw

K

Kenagh	I thank yu^u
Kaygmose	a boat
Kuttchawc	I burne
Komeyhon	Rayne
Kowſe	Father
Kick	Mother
Kemotte	Brother
Kom̄eratimicrequier	yu^u gave it me.



K

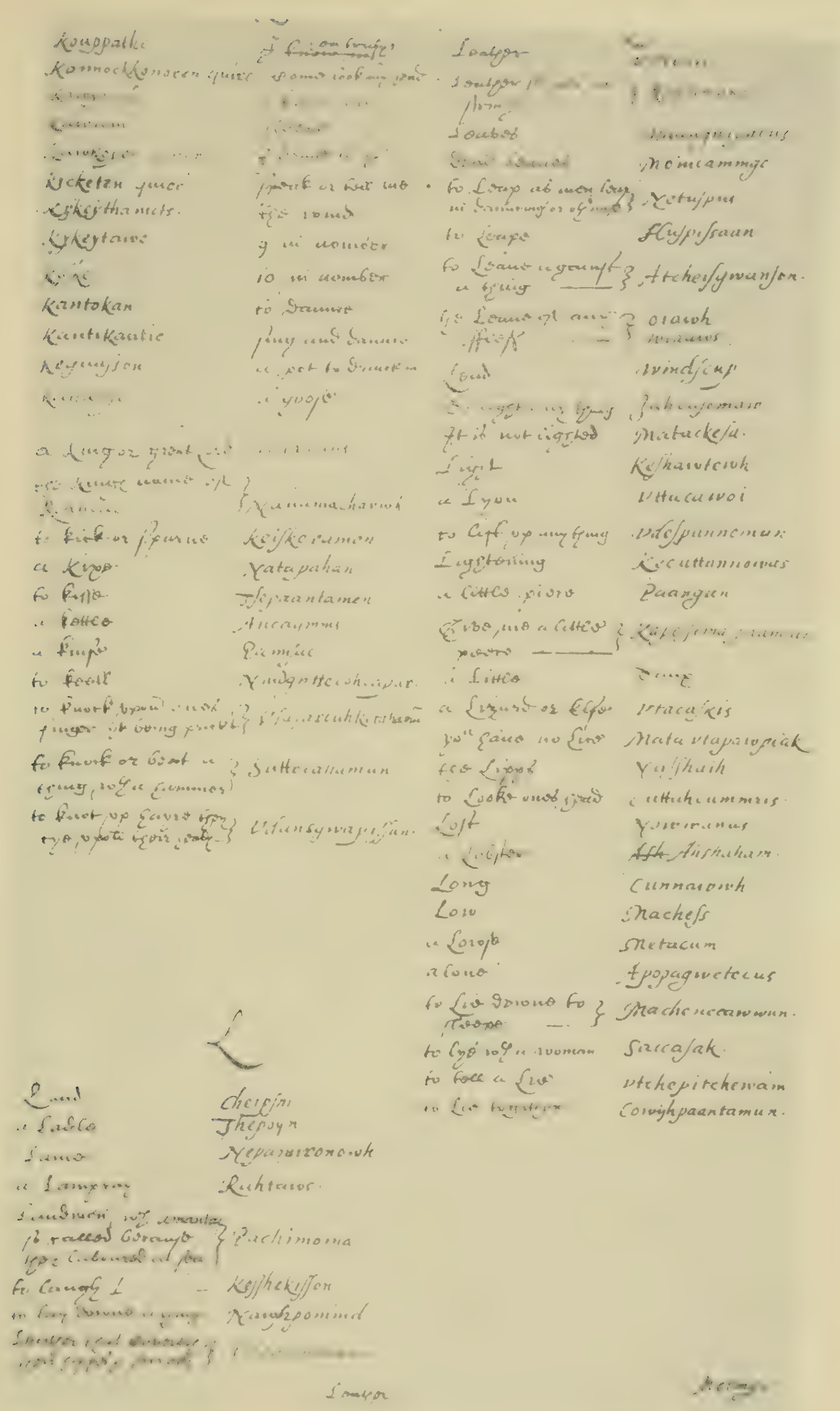
Kouppatke	you truly
Konnockkonoren quire	Come look my head
Kawyough	I know not
Kawwin	Sleepe
Kawkopen quier	I drinck to yo^{u}
Kicketen quier	Speak or tell me
Kÿkeÿthamots	the wind
Kykeytawe	9 in nomber
Noſke	10 in nomber
Kantokan	to daunce
Kantikantie	Sing and daunce
Kegua son	a pot to drinck in
Kahunge	a goose
a King or great Lord	wiroance
the Kings name of Roanoac	Nanamachavwk
to kick or spurne	Keiſkeramen
a Kixe	natapahan
to kisse	Tſepaantamen
a kettle	Aucagmnis
a knife	Pamiſac
to keel	Kmdgvttecohcapar
to knock upon ones finger yt being prickt	Vſaſarouhketa-haom̄
to knock or beat a thing wth a hammer	Suttecattamun
to knot up haire they tye upon their heads	Vdansywapiſſan

L

Land	Cheipſni
a Ladle	Thepoÿn
Lame	Nepamironowh
a Lampray	Rahtaws
Landmen̄ wth amanta so called because they laboureth at sea	Pachimoma
to laugh	Keſſhekiſſon
to lay downe a thing	Nawſiponimd
Leather that covereth their hippes & secretts	Pagwantawun

L

Leather	Vttocais
Leather stripes or stringe	Rahſawans
Leaves	Maaugwipacus
dead Leaves	Momcammge
to Leap as men leap in dauncing or wth ease	Netuſpus
to Leape	Huſpiſsaan
to Leane against a thing	Atcheiſgwanſon
the Leane of any Flesh	oiawh wiaaws
Lead	windſeup
To light any thing	Iahcaſomiaw
It is not lighted	Matackeſa
Light	Keſhawtewh
a Lyon	Vttacawoi
to lift up any thing	Vdeſpunnemun
Lightening	Kecuttannowas
a little piece	Paangun
Give me a little peece	Kapeſſemapaangun
a Little	Taux
a Lizard or Elfe	Vtacaſkis
yo^{u} haue no lice	Matavtapawpiak
the Lipps	Naſſhaih
to Looke ones head	Cuttuheummeis
Lost	Nowwanus
a Lobster	Ahshaham
Long	Cunnaivwh
Low	Macheſs
a Lowse	Metacun
alone	Apopagwetecus
to Lye downe to Sleepe	Macheneccawun
to lye wth a woman	Saccaſak
to tell a Lie	vtchepitchewam
to lie togither	Cowÿhpaantamun



Kouppatke	the ~~Evening~~
Kommockkosuween quire	some look in my head
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
Keketen quier	spark or hot ember
Kekesthamets.	the wind
Kekeytawc	9 in number
Koske	10 in number
Kantokan	to daunce
Kantikantie	sing and daunce
Keyhuyson	a pot to drink in
[illegible]	a goose

a King or great Lord	[illegible]
the Kings name of [illegible]	Kaiumachawoi
to kick or spurne	Keiskeramen
a Kite	Natapahan
to kisse	Tsepantamen
a kettle	Aucaqwins
a knife	Pamuic
to kneel	Yindgotteechowar.
to knock, break one's finger it being frozen	Tsetsaresukhkasham
to knock or beat a thing with a hammer	Suttecamaman
to knit up haire the tye upon their heads	Vttansywaspissan.

Leather	[illegible]
Leather [illegible]	[illegible]
Lobster	[illegible]
[illegible]	Moincammge
to leap as men leap in dauncing or otherwise	Netuspus
to leape	Hussissaun
to leane against a thing	Atchessywanson.
the leaves of any stick	Otawh wecaus.
Lead	Windsenp
[illegible] thing	Jahcuyemaw
It is not lighted	Matackesu.
Light	Keshawteiwh
a Lyon	Vttacawoi
to lift up anything	Vdesspunnemun
Lightning	Kecuttannowas
a little piece	Paangun
Give me a little piece	Kupessemu [illegible]
a little	Tanx
a Lizard or Else	Vttacaskis
you have no Lice	Mata vtapawopiak
the Lipps	Yushaih
to looke ones head	Cuttuhcummeis.
Lost	Yowiranas
a Lobster	~~Ash~~ Aushaham.
Long	Cunnaiowh
Low	Machess
a Louse	Metacum
alone	Apopagwetecus
to lie downe to sleepe	Machencawwun.
to lye with a woman	Sucasak.
to tell a lie	vtchepitchewain
to lie together	Cowiyhpaantamun.

L

Lord	Cheisin
a Ladle	Thepoyn
Lame	Nepaswonowh
a Lamprey	Rahtawc.
Landmen whom [illegible] so called Coraugh [illegible]	Pachimonia
to laugh I	Kesshekisson
to lay down a thing	Nawhpomind
[illegible]	[illegible]

Leather

Sheet 9.

Key to sheet 10

M

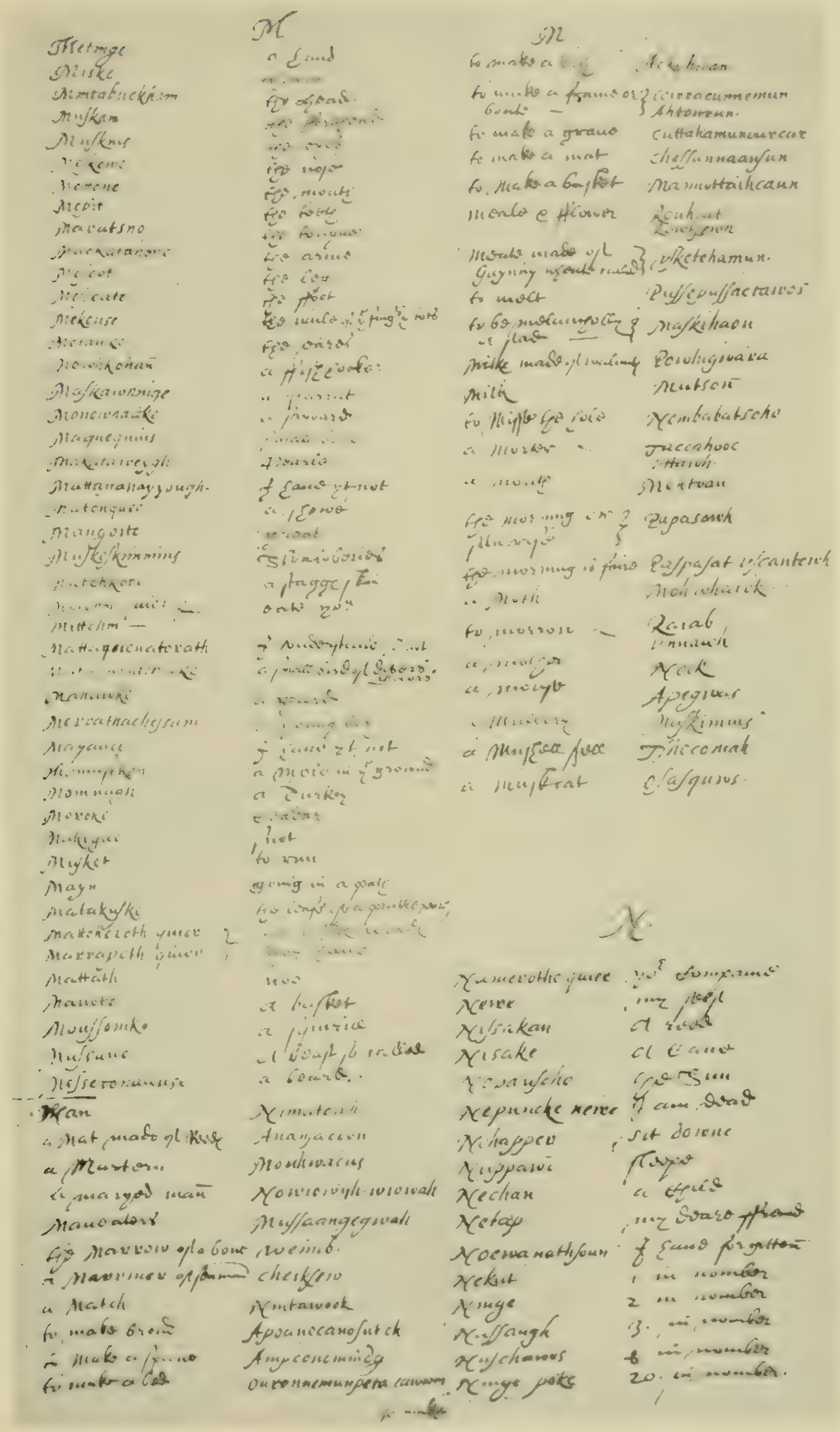
Metinge	a hand
Miſke	Heare
Mintabuckkam	the Head
Muſkam	the Forehead
Muſknis	the eyes
Meſkewe	the nose
Mettone	the mouth
Mepit	the teeth
Maratsno	the tongue
Mackatahone	the arme
Meſcot	the leg
Meſscate	the Foot
Mekense	the naile of ^{t}h^{e} fing^{rs} & toes
Metawce	the eares
Mowhkohañ	a Fishhooke
Maſkawhinge	a parrot
Monowhaake	a sward
Maquequins	small belli
Makataweygh	Pearle
Mattanahayyough	I have yt not
Matchqueo	a showe
Mangoite	great
Muſkſſkimmins	Strawberries
Matchkore	a stagge skin
Mincum quire Mittchm	eate yo^{u}
Mattaquenatorath	I understand yo^{u} not
Mattaſſunutchooke	a small bird of divers clours
Mahawke	a goard
Meroathacheſsam	a young boy
Mayance	I haue yt not
Momuſcken	a mole in th^{e} ground
Momnugh	a Turkey
Moroke	Ceader
Makique	snot
Muſkes	to run
Mayn	going in a path
Matakuſke	the Leafe of a prickle pear
Mattekeroth quier	the wylie words
Marrapoth quier	they haue
Mattoth	noe
Manote	a basket
Mouſſomko	a ſquirill
Muſsaue	a beast so called
Meſſetonaause	a beard
Man	Nimatewh
a Mat made of Reeds	Anansacoon
a Martern	Moschwacus
a maryed man	Nowiowÿhwiowah
Maneaters	Mussaangegwah
the marrow of a bone	weimb
a Marriner or ſeaman	checksow

M

a Match	Nmtawook
to make bread	Apoanocanosutck
to make a ſpoone	Ampconominda
to make a bed	Ouronnemunpeta cawwin
to make a dish	Achehican
to make a frame or boat	Cowcacunnemun Ahtowenn
to make a graue	Cuttahamunourcar
to make a mat	choſſunnaauſun
to make a basket	Mamcotaihcaun
meale & Flower	Rouhcat Rowkſewh
meale made of Guynny wheate called	vſketehamun
to melt	Puſſepuſſactawos
to be melancholly or sad	Maſkihaon
Milke made of walnuts	Powhigwava
Milk	Mutsoñ
to misse the hole	Nembabatsoho
a Morter	Tuccahooc Vttawh
a mouth	Mehtoan
the morning or sun rise	Papasowh
the morning is faire	Paſpaſat vſcantewh
a Moth	Mohwhawk
to morrow	Raiab Vnnawh
a mother	Neck Apegwas
a Mulbery	Muſkimnis
a Mushell shell	Tſhecomak
a Muskrat	oſaſquws

N

Numerothe quire	yo^{r} companie
Neine	my self
Niſsakan	a reed
Nisake	a Cane
Nepauſche	the Sun
Nepunche neire	I am dead
Nehapper	sit downe
Nuppawe	Sleepe
Nechan	a Child
Netap	my deare Freind
Noweanathſoun	I haue forgotteñ
Nekut	1 in nomber
Ninge	2 in nomber
Nuſſaugh	3 in nomber
Nuſchawus	8 in nomber
Ninge poke	20 in nomber



M

Metmge	a Land
Miske	[illegible]
Mmtabuckpsim	the head.
Muskam	the [illegible]
Muskins	the eyes
Nekewe	the nose
Nerene	the mouth
Mepit	the teeth
Meratsno	the tongue
Mackatanone	the armes
Mecot	the leg
Mecate	the feet
Mekeuse	the naile of y^e finger or toe
Meranke	the eares
Nowikohan	a stickeoke:
Maskawonnige	a parret
Monowaaske	a lizzard
Maquequnus	[illegible]
Makataweyghi	[illegible]
Mattanannayyough.	of Sand y^t not
Matenquu	a Crowe
Mangoste	a goat
Muskeskimmins	Strawberries
Matchkore	a stagge / [illegible]
[illegible]	oake yet
Mittchim —	
Mattaqueunaterath	y^e understand not
[illegible]	a piece of board
Nanaunke	a [illegible]
Meroathachessum	[illegible]
Mayance	I [illegible] it not
M[illegible]peken	a mole in y^e ground
Momnugah	a Turkey
Moroke	[illegible]
Nakique	hot
Misket	to run
Mayn	going in a path
Matakuske	[illegible]
Matcheerath quier }	[illegible]
Marrapeth quier	[illegible]
Mattath	noe
Manote	a basket
Moussomko	a [illegible]
Nussane	a [illegible]
Nesseronamuse	a bowle.
Man	Nimatewh
a Mat made of Rushe	Anaqacun
a Marten	Monkiwacus
a maryed man	Nowiwiyh-wiowah
Manowlord	Mussaangegwah
the Marrow of a bone	weino.
a Marriner of [illegible]	cheiksew
a Match	Nmtawook
to make bread	Apouncanosutch
to make a [illegible]	Ampconemmidg
to make a bed	Ourenanemunpeta cawwon

M

to make a [illegible]	Ackakaan
to make a frame or bowle — }	Cerracummemun Ahtowrun.
to make a grave	Cuttakamunuurcur
to make a mat	chessunnaausun
to make a basket	Mammottaihcaun
meale or flower	Rouhcut [illegible]
meale made of Guyning [illegible] }	Vsketchamun.
to melt	Pussepussactawes
to be melancholy or sad }	Maskihaon
milke made of walnuts	Powhgiwara
milk	Mutson
to misse the cole	Nembabatscho
a morter	Taccahooc [illegible]
a mouth	Mentoan
the morning [illegible] }	Papasowh
the morning is faire	Passpasat y^e cantewh
a Moth	Moh[illegible]chaick
to morrow	Raiab [illegible]
a mother	Neck
a mouse	Apegwas
a Mistery	Nuskimmus
a Muske fox	Tiuccomak
a muskrat	Osasquus

N

Namerothequier	yo^r companions
Nerre	my self
Nissakan	a [illegible]
Nisake	a Cane
Neeausko	the Sun
Nepuncke nerre	I am dead
Nehappen	sit downe
Nuppawi	sleepe
Nechan	a child
Netap	my deare freind
Noewanathsoun	I have forgotten
Necut	1 in number
Ninge	2 in number
Nussaugh	3. in number
Nuschawus	8 in number
Ninge pokse	20. in number.

Sheet 10.

Key to sheet 11

N

Noringeamind baketaw	Mend up the fier
Nehapper kupper	Sit further
Namaſke Nameche	Fish of any kind
Nethkeon	the nose
Neputts	the tooth
Noraughtoan	put on yo^{r} hat
Nahayhough	I haue it.
The Nailes of my hand	wÿhchaudg
Naked	Nepowwer
a Napkin or any lynnen cloth	Mattaſſaith
Naught broken or Crackt	Perewh
the neck of any thing	Nuſgwoik
a nett	Auſſas
Next	Vtakÿk
a Nettle	Mayhſaan
the nest of a bird	wahcheſao
Neare by or next hand	Patewh
New moone	Suckimma
Night	Tapacoh Reihcawh
No or nay	Matah tah [sic]
None	Rawwanud
the noise of a peece or Fall of a tree	Penim
No more	Tawhs
I will drink no more	Nutſſegwacup
the North	vtcheiks
a nut like a small acroñ, good meat	chechinquamins

O

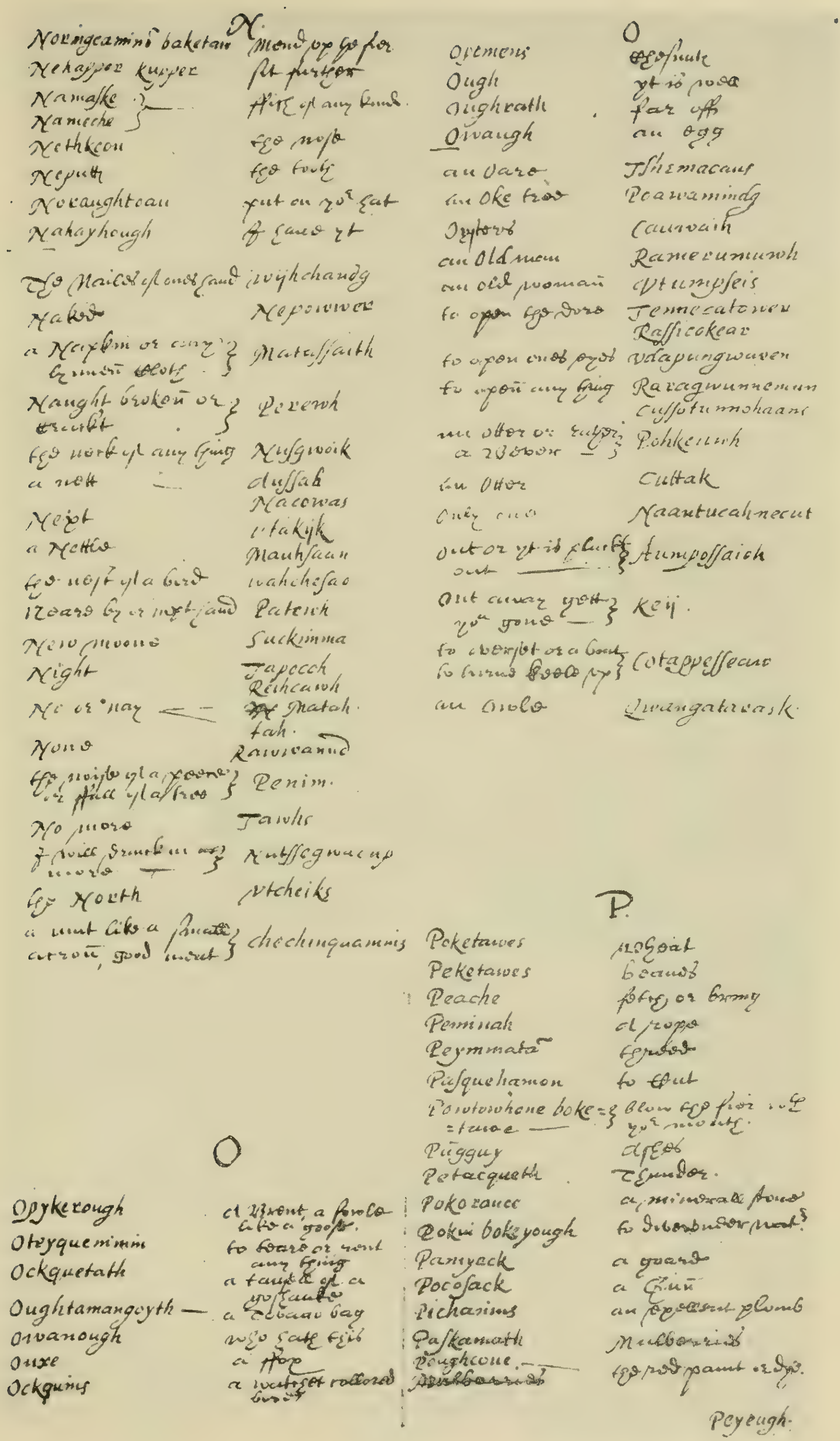
Opykerough	a Brent, a fowle like a gooſe
Oteyquenimin	to teare or rent any thing
Ockquetath	a tauſell of a goſhauke
Oughtamangoyth	a Tobacco bag
Owanough	who hath this
Ouxe	a Fox
Ockquins	a watchet collored bird

O

Opomens	Cheſnuts
Ough	yt is well
Oughrath	far off
Owaugh	an egg
an oare	Tſhemacaus
an Oke tree	Poawamindg
Oysters	Cauwaih
an Old man	Ramerumuwh
an old woman	Vtumpſeis
to open the dore	Tennecatowee
”	Raſſicokear
to open ones eyes	Vdapungwaoen
to open any thing	Raragwunnemun Cuſſotunnohaans
an otter or rather a Beaver	Pohkewh
an Otter	Cúttak
Only one	Naautucahnecut
Out or yt is pluckt out	Aumpoſſaioh
Out away gett yo^{u} gone	Keÿ
to overset or a boat to turne keel up	Cotapeſſeaw
an Owle	Quangatarask

P

Poketawes	wheat
Peketawas	beans
Peache	fetch or bring
Peminah	a rope
Peymmata	thread
Paſquehamon	to Cut
Powtowhone boketmoc	blow the fire with yo^{r} mouth
Pugguy	Aſhes
Petacqueth	Thunder
Pokorance	a minerall stone
Pokin bokeyough	to dive under wat^{r}
Pamyack	a goard
Pocosack	a gun
Pichanins	an excellent plumb
Paſkamath	Mulberries
Poughcone	the red paint or dye



N

Noringeamind baketan	Mend the fier
Nekapper kupper	ſet further
Namaſke Nameche	fiſh of any kind.
Nethkeon	the noſe
Nepuih	the tooth
Noraughtoan	put on yor hat
Nakayhough	I haue yt
The Naile of ones hand	Wijhchandg
Naked	Nepowwer
a Napkin or any linnen cloth	Mataſſaith
Naught broken or crackt	Perewh
the neck of any thing	Nuſgwoik
a nett	Auſſab Macowas
Next	Utakyk
a Nettle	Mauhſaun
the nest of a bird	wahcheſao
Neare by or next hand	Paterwh
New moone	Suckimma
Night	Tapeech Reihcawh
Ne or nay	~~Ma~~ Matah. tah.
None	Rawrenanno
the noiſe of a gun or fall of a tree	Penim.
No more	Tawh
I will drinck no more	Nutſſegwacup
the North	Utcheiks
a nut like a ſmall acron, good meat	chechinquamins

O

Oremens	the ſnake
Ough	yt is ſore
Oughrath	far off
Owaugh	an egg
an Oare	Tshemacans
an Oke tree	Poawamindg
Oysters	Cauwaih
an Old man	Ramerunuwh
an old woman	Utumpſeis
to open the dore	Tennecatowen Raſſicokear
to open ones eyes	Udapungwaven
to open any thing	Raragwunnemun Cuſſotunnohaans
an otter or rather a Beaver	Pohkeuwh
an Otter	Cuttak
Only one	Naantucah-necut
out or yt is pluckt out	Aumpoſſaich
Out away get you gone	Keij.
to overſet or a boat to turne keele up	Cotappeſſecus
an Owle	Qwangataraſk.

O

Opykerough	a Brent, a fowle like a gooſe.
Oteyquemmin	to teare or rent any thing
Ockquetath	a taſſell of a goſhauke
Oughtamangeyth —	a tobacco bag
Owanough	who hath this
Ouxe	a ſtop
Ockquins	a watchet collored bead

P.

Poketawes	wheat
Peketawes	beanes
Peache	[illegible]
Peminah	a rope
Peymmata	thred
Pasquehamon	to ſhut
Powtowhone boketawe	blow the fier with yor mouth.
Puggay	aſhes
Petacqueth	Thunder.
Pokozauce	a minerall ſtone
Pokwi bokeyough	to diſcover ſecrets
Pamyack	a gourd
Pocoſack	a Gun
Pichamins	an excellent plumb
Paſkamath	Mulberries
Poughcone ~~Mulberries~~	the red paint or dye.

Peyeugh.

Sheet 11.

P

Peyeugh	returning
Pickuts	the gum we hold balſome
Potawaugh	a Porpois
Parance	5 in nomber
Paſpene	to walk about
Piſquaoñ	a duck
Paſkonath	the gold ſpark in the ſand
Penouge jeroñ	stone
Pocohaak	a botkin or aule
Pattihquapiſson	a hat
Pocontath	a girdle
a Parrat	Maſſacamwindg
to Paint black	Nummatchqwran
to paint red	Numerathguran pocoon
Perle	Matacawiak
Perle mushell sells	Vſaſgwoik
Peas	Oſſantamens
a Peice of a pot or a pot seard	Rummaſnwendg
a Piece of bread	Rowrooi Appones
a Pestle	Pocohaac
to Play on a pipe	Pawpecoon
a Tobacco pipe	vppocano
the pipe is fowle	Vppocanomoiee
the pipe is stopt	Opoteyawh
the Pipe is broken	Vdei heawunsppocon
a Pin	Pohcohaac
to Pinch	Nepokehanaan̄
a Pigeon	Towaigwoins
a wood-pidigoon	Quanonah
a pillow or to lay under ones head	Ahqwaſs
to pisse	shekÿn
a Pike	kÿhtoroon
Porredge or broath	Noumpgwaam
a Post	Meihtusmuſheis
a Polcat	Cuttenamuwhwa
a Pot	Aucagwins
to powre out water	Qwatchacuwhcaan
to powre in water	Vſowcunnemun
a porpoyse	Potawoc
the Pox	Nummanemennaus
a playſtor	Nuttacoondah
a Plomb ſtone	Maquaſcawnomel
a Plomb very Delitious when yt is ripe	Puſheninis

P

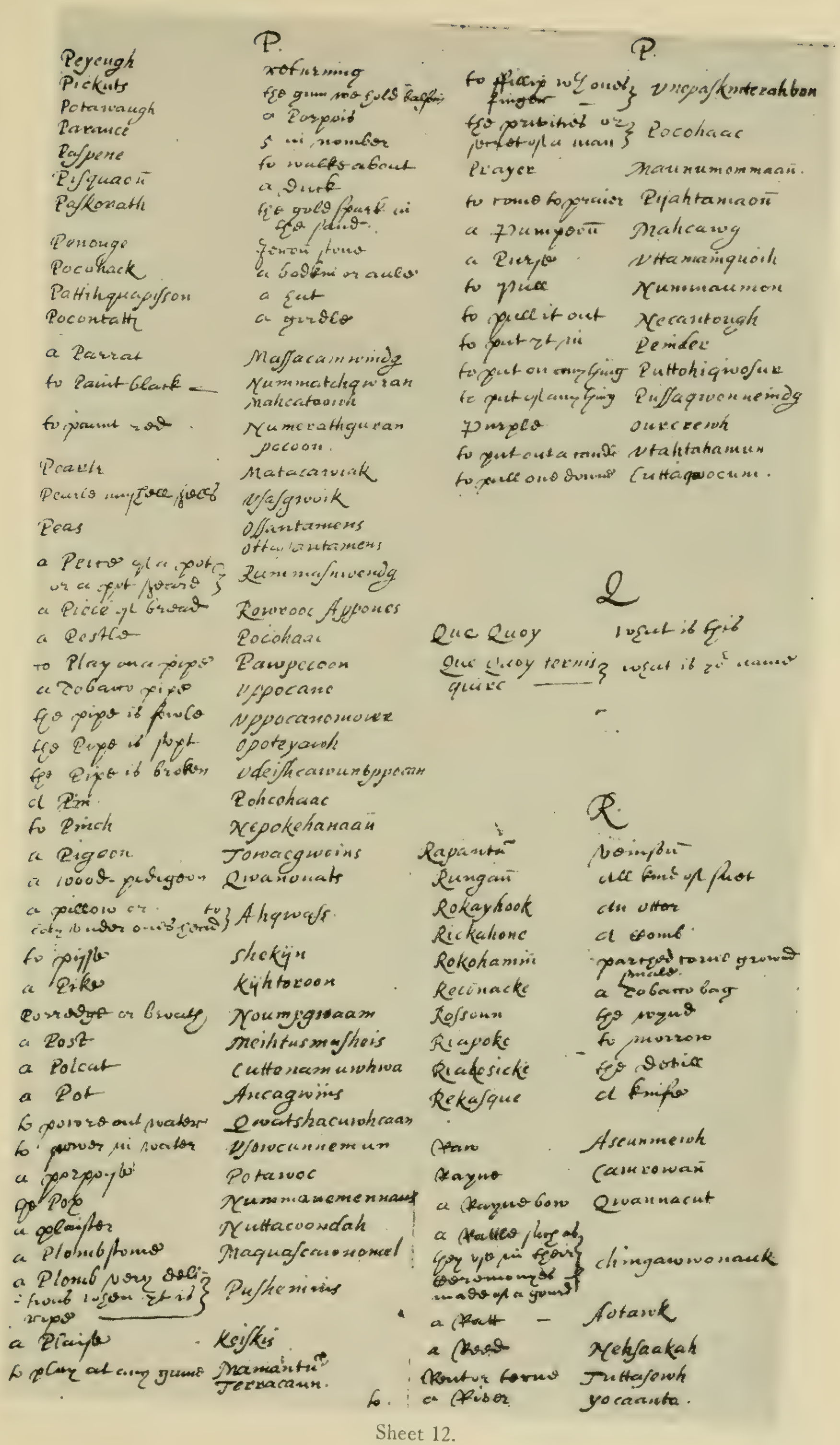
a Plaiſe	Keiſkis
to play at any game	Mamantu Terracaun
to fillip wth ones finger	Vnepaſkmtecahbon
the privities or secret of a man	Pocohaac
Prayer	Maunumommaañ
to come to praier	Pyahtomaaoñ
a Pumpeoñ	Mahcawg
a Purse	Vttamamquoih
to Pull	Nummaumon
to pull yt out	Necantough
to put yt in	Penider
to put on any thing	Puttohiqwofur
to put off any thing	Puſſaqwonneindg
Purple	ourcrewh
to put out a candle	Vtahtahamun
to pull one downe	Cuttaqwocum

Q

Que Quoy	what is this
Que Quoy ternin quire	what is yo^{r} name

R

Rapantā	venison
Rungañ	all kind of ſuet
Rokayhook	an otter
Rickalhone	a Comb
Rokohamin	parched corne ground ſmale
Recōnacke	a Tobacco bag
Roſsoun	the wynd
Riapoke	to morrow
Riahosicke	the devill
Rekaſque	a knife
Raw	Ascunmewh
Rayne	Camrowañ
a Raynebow	Qwannacut
a Rattle such as they use in their Ceremonies made of a gourd	chingawwonauk
a Ratt	Aotawk
a Reed	Nehſaakah
Rent or torne	Tuttaſewh
a River	yocaauta



P.

Peyeugh	returning
Pickuts	the gum wch gold lasting
Potawaugh	a Porpois
Parance	5 in number
Passpene	to walke about
Pisquaon	a Duck
Paskorath	the gold sparck in the sand
Pononge	Iron stone
Pocohack	a bodkin or aule
Pattihquapisson	a hat
Pocontah	a girdle
a Parrat	Massacamwindg
to Paint black	Nummatchqweran Mahcatoowh
to paint red	Numerathquran pocoon.
Pearle	Matacawiak
Pearle unthrilled	Usasqwoik
Peas	Ossantamens Ottawantamens
a Peece of a pot or a pot sherd	Rummasnoendg
a Piece of bread	Rowrooc Apones
a Pestle	Pocohaac
to Play on a pipe	Pawpecoon
a Tobacco pipe	Uppocanc
the pipe is foule	Uppocanomowr
the Pipe is stopt	Opotenyauh
the Pipe is broken	Udeisheawunhppocan
a Pin	Pohcohaac
to Pinch	Nepokehanaan
a Pigeon	Towacqweins
a wood-pidgeon	Qwanonats
a pillow or to lay under ones head	Ahqwass.
to pisse	shekijn
a Pike	Kijhtoroon
Porredge or broath	Noumpqwaam
a Post	meihtusmusheis
a Polcat	Cuttonamuwhwa
a Pot	Aucagwins
to powre out water	Qwatshacuwhcaan
to powre in water	Ussowcunnemun
a porpoyse	Potawoc
the Pox	Nummanemennaut
a plaister	Nuttacoondah
a Plombstone	Maquascamonomel
a Plomb very delicate when yt is ripe	Pushemins
a Plaise	Keiskis
to play at any game	Mamantu Terracaun.

to.

P.

to stirr wth ones finger	Unepaskontenahbon
the privities or pricke of a man	Pocohaac
Prayer	Maunumommaan.
to come to praier	Pyahtamaon
a Pumpeon	Mahcawg
a Purse	Uttamamquoih
to pull	Nummaumon
to pull it out	Necantough
to put yt in	Pemdee
to put on anything	Puttohiqwosue
to put of anything	Pussaqwonnemdg
Purple	ourcrewh
to put out a candle	Utahtahamun
to pull one downe	Cuttaqwocum.

Q

Que Quoy	what is this
Que Quoy ternis quire	what is yor name

R.

Rapantu	venison
Rungan	all kind of shot
Rokayhook	an otter
Rickahone	a Comb
Rokohamin	parched corne ground small.
Reconacke	a Tobacco bag
Rossoun	the wynd
Riapoke	to morrow
Riakosicke	the Devill
Rekasque	a knife
Raw	Ascunmeowh
Rayne	Camrowan
a Rayne bow	Qwannacut
a Rattle they use in their ceremonies made of a gourd	chingawwonauk
a Ratt	Aotawk
a Reed	Nehsaakah
Rotten corne	Tuttasowh
a River	yocaanta.

Sheet 12.

Key to sheet 13

R

Ripe	wingatewh
not Ripe	vſcannewh
to rise up	Paſſaquear
the rind of a tree like hempe	Cheſawk
a ring	Nekereinſkeps
a rose	Puſſaqweinbun
a rose-tree	Puſſaqweninubanieindg
to rowle or tosse as a ship at sea	Vtucotucoſa
to row	Tchÿmauc
to roast	Apoirſſaw
the root of tobacco	Vppoo chappoc
a root	Vtchapoc
a rope or Cord	Pemuntnaw
to run	Raſannear
Rushes	Cakekeſqus
to cut rushes	Mamaſc Cakekeſqwus

S

Suckquohana	water
Sawwone	Salt
Sakahook	the cleare stones we gather
Sakahokan̄	to write
secon̄	to spit
Sekehekonaugh	to write
Sand	Racaioh
to sacrifice	vtakar
to say or be sayd	kecutton̄
a sayle	Tſemaoſay
to see	vnnamun̄
not to see	Matauamowun̄
let me see it	Numpeuamun̄
a seat in a boate or a bench	Tuſsan̄
seedes	Amenacarac
Sea weedes	Aſearaſqwus
Sedge	Eſkowwaſcus
to set down any thing	Mhnemun̄
the sea	Yapam̄
Scum	Peihtaōh

S

the scales of a Fish	wohainkank
to scratch	vnecuſſopiſſon
to scratch ones head	vn [indication that the preceding Virginia language word is of this meaning.]
a scab	Vmeqwuſsum
sharpe	Keneiwoh
Sheres	Moundgtacan
Shells	ohjhaangunnemans
a ship	Muſsawuruc
yt shyneth	Aſsentucayah
Shoos	Mawhcaſuns
to Shoote	Nepomatamen̄
a shooting gloue	Mereengaſs
short	Taiqwaiſuw
shut the dore	Keſsahikear
to scrub ones head	Necutchuckſkuw
to sing or daunce	cante-cante
to sit downe	Nawpin
to sitt nearer	otaſcotaqwopur
to sitt further	Muſſataquopur
to be sick	Arummoſsouth
the single of a deare	wuſhagwun
a sister	Nuckaandgam
the kin or fur of a hare	weiſacannac
a sheldrake	Rowhgwawh
to sleepe	Nevaun̄
a slo-worme	Apouſeaſe
Smothe	Vſsequahamun̄
Smoak	Kekepemgwah
to smell	Numeramin
to snort	Nequavuttonndmun
to suit ones nose	Vtannegwan
Snow	Coan̄
yt Snoweth	Rookenah Coan
a snake vide adder	
a Snayle	Pomahaum
to siow or set wheat	Nuttaſpin
to sw wh a needle	Huſquamū
a sore	Meihkaih
to soak bread	Nepokevnnamun̄
the sowle or vitall breath of man̄	Netſhetsunh
to strew or cast	Nummeraantaan
the spars of howse	
to spit	Tſehqwun
a sparrowhawk	Tatacaumevan̄
sparks that glither	Pahgwurraow

R

Ripe	wingatewh
not Ripe	Vſcannewh
to riſe vp	Paſſaquear
the rozin of a tree like gumme	Cheſawk
a ring	Nekerenſkeps
a roſe	Puſſaqwembun̄
a roſe-tree	Puſſaqwembuna=menidg
to rowle or toſſe as a ſhip at ſea	Vtucotucoſa
to row	Tchijmaac
to roaſt	Apoiuſſaw
the root of tobacco	Vppoo chappoc
a root	Vtchapoc
a rope or cord	Pemuntnaw
to run	Raſamear
Ruſhes	Cakekeſqus
to cut ruſhes	Mamaſe Cakokeſqwus
to rub a thing	Vſſeqwahamun̄

S

Suckquohana	water
Sawwone	Salt
Sakahook.	the cleare ſtones we gather
Sakahokan̄	to write
Secon̄	to ſpit
Sekekekonaugh	to write
Sand	Racawh
to ſacrifice	Vtakar
to ſay or be ſayd	Kecutton̄
a Sayle	Tſemacſay.
to ſee	Vnnamun̄
not to ſee	Matanamowun̄
let me ſee it	Numpenamun̄
a ſeat in a boate or a houſe	Tuſſan̄
Seedes	Amenacarac.
Sea weedes	Aſcaruſqwus
Sedge	Eſkowwaſcus
to ſet down any thing	Ahnomun̄
the Sea	yapam̄
Sruin	Peihtaih

S

The ſcales of a fiſh	wohaihank
to ſcratche	Vnecuſſopiſſon
to ſcratche one's head	vn
a ſcab	Vmeqwuſſum
ſharpe	Keneiwoh
Sheeres	Moundgtacan
Shells	ohſhaangumemuns
a ſhip	Muſſawurnc
yᵗ ſhip mote	Aſſentucayak
Shooes	Mawhcaſuns
to Shoote	Nepomatamen
a ſhooting gloue	Mereengaſs
ſhort	Tacqwaiſuw
ſhut the dore	Keſſakikear
to ſhrinke vnder ſeil	Necutchuckſkuw
to ſing or daunce	Cante-cante.
to ſitt downe	Nawpin
to ſitt nearer	otaſſotaqwopur
to ſitt further	muſſataqwopuc
to be ſick	Arummoſſouth
the ſingle of a deare	wiſhagwun.
a ſiſter	Nuckaandgum
the ſkin or fur of a hare	weiſacamac.
a ſheldrake	Rowhgwawh.
to ſtoope	Nepaun̄
a ſlo-worme	Apouſeaſe
Smothe	Vſſequahamun.
Smoak	Kekepemgwah
to ſmell	Numeramin
to ſnort	Nequaruttoundmun
to ſnit one's noſe	Vtamegwan.
Snow	Coan̄
yt Snoweth	Rookeuh Coan.
a ſnake pide adder.	
a Snayle	Pomahaum
to ſhow or ſet what	Nuttaſſpin.
to ſew with a needle	Huſquamun̄.
a ſore	Meihkeih.
to ſoak bread	Nepokevnnamun̄.
the ſoule or vitall breath of man	Netſhetſunk
to ſorrow or faſt	Nummeraantaan
the ſparks of fyre	Weihtuſſan̄.
to ſpit	Tſehqwun.
a ſparrowhawk	Tataeaumeran̄.
ſparks that gliſter	Pahgrowreaow.

. the ſpring

S

the spring	Suttekepacatuwh
to speak alowd	Memmowchick taywuſſan
to speake softly	Kemaantun
a squirrell	Muſſanek
to looke a squint	Permgwah
a sturgeoñ a sturgeoñ	Cuppotoon
a string vide leather	
a stone	Shacahocañ
a little stone	Manansk
to steale	Commotooah
a stake	wepattaha
a stalke	Mehtacouc
the stalke of gynney or Virginia wheat	Thepahcoon
to strike	Nopaſſmgwahwn
to strike wh a sword	Nepacamañ
stockings	Cawgweawans
a starr	Attaugwaſſowk
to stir the pot	Vmmatahamū
to stretch ones selfe	Vſſhebowſkeom
the stones of any male thing	Vtshowwah
to goe to stoole or to ease ones self	Vumuſkittuwh
a stoole to sit upon	Apahpuñ
a straunger	Vttaſantaſſawinh
strong	Towangh
to step or goe up	Accowoñ
the stinging of a snake	Vtagwoong
to strike fier	Bocataoh kok
to stinck	Auutas
the Sun	Keſhowſe
Sun rise vide morning	
Sun set	Quunſewh
to sup or to haue bene at supper	Meatſuñ
Summer	Cowwotaioh
to suck	Anowwonnir
to sweat	Vebowhaſs
to swym̄	Tooſkean̄
to Swell	Cunnaqueis
a swañ	wopuſſouc
to swallow	Quautamu
to sweepe	Tſekehica
to swymm as a pece of wood or feather on the water	Puppaqwahauns

T

Tanggo	Let me se it.
Towaughe	a Crome [sic]
Tanre	small or little
Tamokin	to swym̄
Tauoſin	a toole [sic]
Tangeguath	a fur like a sables
Tamohake	a hatchett
Take it	Vntowh
to take up	Vummaumum
to take up wh a spoone	Anutſahamuñ
to take off	raſſunnemun
to take one prisonʳ	Necakeſſutoñ
to take tobacco	Nepſſeaupooc
to take heed	Amwoir
a target	Amun whock
the taile of any thing	wuſhaqwun
tawny	Nuſcahſaiyam
to tell one any thing	Cutterah
to throw a thing away	Apacet
thunder	Vmdgtuppauk
a thigh	Wÿngwaus
these	yowhs
this	yowhk
the thomb	Vketeqwaivttemdg
the throat	Vegwantaak
three	Nus
three hundred	Nuſwohcuſſannack
a thornebark	Aumboick
to tickle one	Kekitchuchun
tobacco	vhpooc
a tobacco pipe	vhpoocañ
a tobacco bag	vttamaucoih
the Tobacco is good	Wmyutſcovhpooc
the Tobacco is naught	Keſkemaikpooc
a Towne	Muſſavan
the traine of a bird	Otanneis
a tree	Meihtus
a greene tree	vſqwatanaik
a wallnut tree	Aſſunnomeindg
a Turtle	accomodemſk
a sea Turtle	Torocuppewk
a turd	Moich

S

the ſpring	Suttekepacatuwh.
to ſpeak alowd	Memmowchick = = tagwuſſan
to ſpeake ſoftly	kemaantun.
a ſquirrell	Muſſanek
to looke a ſquint	Perngwah
a ſturgeon a ſturgeon	Cuppotoon.
a ſtrong wide lether.	
a ſtone	Shacahocan̄
a little ſtone	Manansk.
to ſteale	Commotouwh
a ſtake	Weputtaha
a ſtalke	Mehtacooc
the ſtalke of greene or Virginia wheat	Thepahcoon
to ſtrike	Nepaſſingwahwn
to ſtrike with a ſword	Vepacaman̄
ſtockings	Cawaiweawans
a ſtarr	Attaangwaſſowk.
to ſtir the pot.	Vummatahamū
to ſtretch ones legs	Wuſſhebowſkeom
the ſtones of any male thing.	Vtshowwah
to goe to ſtoole or to eaſe ones ſelf	Vumaſkittuwh
a ſtoole to ſit vpon	Apahpun̄
a ſtranger	Vttaſantuſſawaih
ſtrong	Towaugh
to ſtep or goe vp	Accowſon̄
the ſtinging of a ſnake	Vtagwoong
to ſtrike fier	Bocata-oh Rok
to ſpitt	Auutas
the Sun	Keſhowſe
Sun riſe vide morning.	
Sun ſet	Quunſewh
to ſup or to have been at ſupper	Meaſſun̄
Summer	Cowwotaioh
to ſuck	Anowwonnie
to ſhoot	Vebowhaſs
to ſwym	Tooſkean̄
to ſwell	Cunnaqueis
a ſwan	Wopuſſouc
to ſwallow	Quantamū
to ſweepe	Tſekehica
to ſwymme as a piece of wood or feather on the water	Puppaqwohaums.

Tanggo.

T.

Tangge	let me ſee it
Towaughe	a thorne
Tanxe	ſmall or little
Tamokin	to ſwym
Tauoſin	a ſtoole
Tangeguath	a fur like a ſable.
Tamohake	a hatchett
Take it	Vntough
to take vp	Vummaumum
to take vp with a ſpoone	Anntſahamun
to take off	Raſſunnemun
to take one priſoner	Necakeſſutton̄
to take tobacco	Nepeſſeanſouc
to take heed	Amwoir
a target	Amun whock
the taile of any thing	wuſhaqwun
tawny	Nuſcahſaiyam
to tell one any thing	Cutteeah
to throw a thing away	Apacet
thunder	Vmdgtuppauk.
a theif	Wighqwaus
thoſe	yowhs
this	yowhk
the thumb	Vketeqwai vttemdg
the throat	Vegwantaak.
three	Nus
three hundred	Nuſwohcaſſunnack.
a thornback	Aumboick
to tickle one	Kekitchuchun
Tobacco	Vhpooc
a Tobacco pipe	Vhpoocan̄
a Tobacco bag	Vttamancoih
the Tobacco is good	Wingutſeo vhpooc
the Tobacco is naught	Keſkemaik pooc
a Towne	Muſſavan
the traine of a bird	Otameis
a tree	Meihtus
a greene tree	Vſqwatanaik
a wallnut tree	Aſſunnomeindg
a Turtle	accomodemſk.
a ſea Turtle	Towcuppewk.
a turd	Moich

Sheet 14.

T

a Turkey	Monanaw
a Turkey Cock	Oſpanno
to turne a Cake upon the coales	Cuſkeeſſmuñ
twyned threed	Pemuckweranemd
to tye or make fast any thing	

V

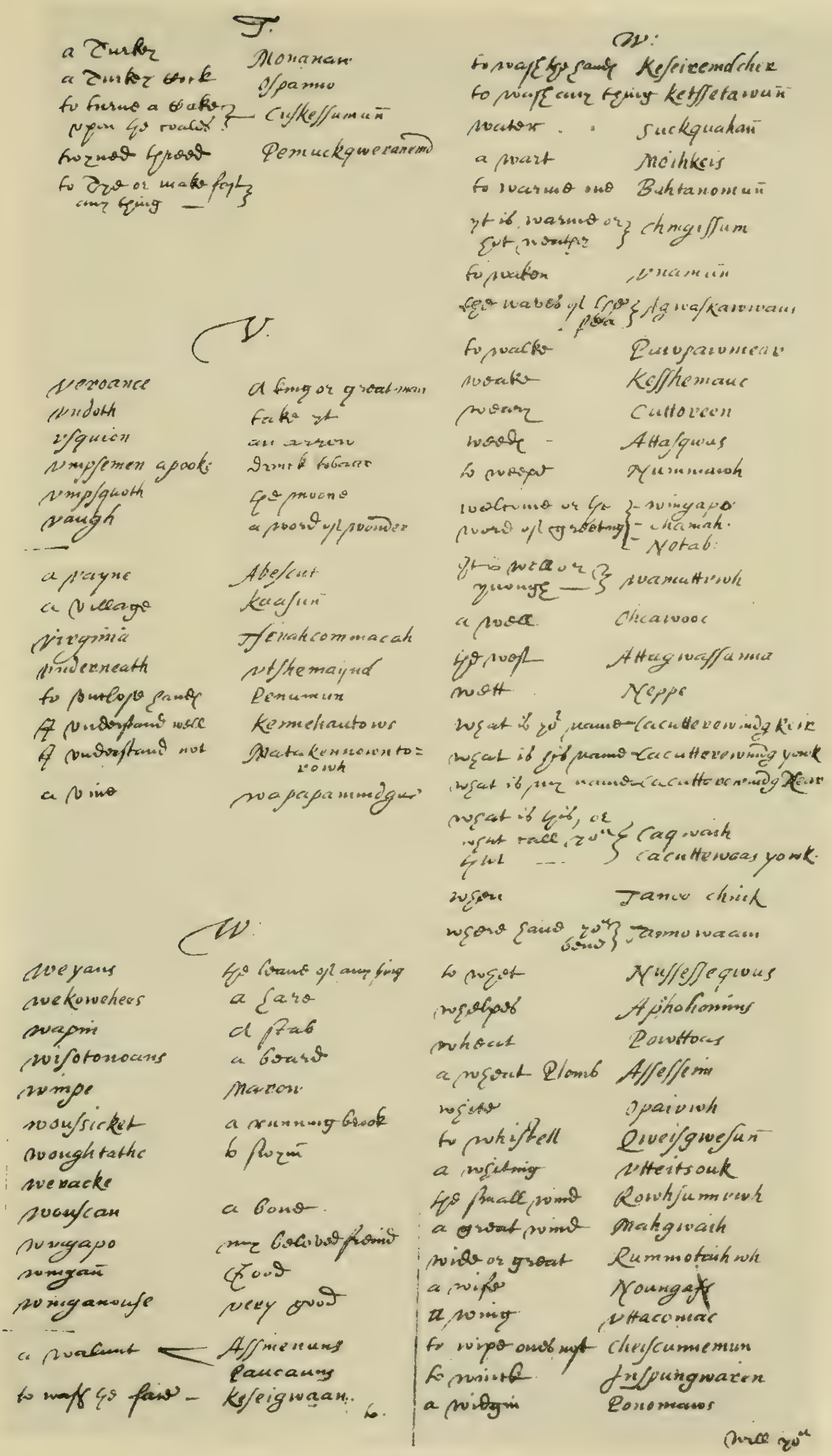
Veroance	a king or great man
vndoth	take yt
vſquion	an arrow
vmpſemen apooke	drinck tobacco
vmpſquoth	the moone
vaugh	a word of wonder
a vayne	aseſcut
a Village	kaaſuñ
Virginia	Tſenakcommacah
vnderneath	vtſhemaÿnd
to vnclose hands	Penumun
I understand well	Kennehautows
I understand not	Matakennowntorowh
a vine	wapapamındgas

W

weyans	the leaue of any thing
wekowehees	a hare
wapin	a ſtab
wiſotonoans	a beard
winpe	marrow
wouſsicket	a running brook
woughtathe	to ſwym̄
weracke	
wauſcan	a bone
wingapo	my beloved friend
wingañ	Good
winganouſe	very good
a walnut	Aſſinenuns
to wash the face	Keſeigwaan

W

to wash the hands	Keſeiremdcher
to wash any thing	ketſſetawuñ
water	Suckquahañ
a wart	Meihkeis
to warme one	Bahtanomūn
yt is warme or hot weather	Chingiſſum
to waken	Vnamuñ
the waves of the sea	Agwaſkawwaus
to walke	Pawpawmear
weake	Keſſhemauc
weary	Cuttoveen
weede	Attaſqwus
to weede	Nummawh
welcome or the word of greeting	wingapo chamah Notas
Yt is well or ynough	wamattvwh
a well	Ohcawoos
the west	Attagwaſſanna
wett	Neppe
what is yoʳ name	Cacutterewindg Reir
what is his name	Cacutterewmdg yowk
what is my name	cacuttorewindg Kear
what is this, or what call youᵘ that	Caqwaih cacuttewaas yowk
when	Tanoo chink
where haue youᵘ bene	Tannowaam
to whet	Nuſſeſſeqwus
whelpes	Aphohomins
wheat	Powttoas
a wheat Plomb	Aſſeſſein
white	Opaivwh
to whistell	Qweiſgweſuñ
a whiting	Vtteitsouk
the small wind	Rowhſunnvwh
a great wind	Mahgwaih
wide or great	Rummotaihwh
a wife	Noungaſs
a wing	Vttacomas
to wipe ones nose	Cheiſcunnemun
to winck	Juſpungwaren
a widgin	Ponomaw s



T.

a Turkey	Monanaw
a Turkey cock	Ospanno
to turne a cake upon the coales	Cuskessamun
turned bread	Pemuckqweranend
to dry or make soft any thing	

V.

Veroance	A king or great man
vndoth	take it
vsquion	an arrow
vmpsemen apook	drink tobacco
vmpsquoth	the moone
vaugh	a word of wonder
a vayne	Abescut
a Village	kaasun
Virginia	Tsenahcommacah
underneath	vtshemaynd
to vnclose hands	Penamun
I vnderstand well	Kemehautows
I vnderstand not	Matakennowntorowh
a Vine	wapapammdgu

W.

weyans	the leane of any thing
wekowehees	a hare
wapin	a stab
wisotonoans	a board
wimpe	Maron
woussicket	a running brook
woughtathe	to flow
weracke	
wouscan	a bone
wingapo	my beloved friend
wingan	good
wingarouse	very good
a walnut	Assmenuns Caucauns
to wash the face	Keseigwaan.

W:

to wash the hands	Keseiremdcher
to wash any thing	ketssetawun
water	Suckquahan
a wart	Moihkeis
to warme one	Bshtanomun
it is warme or hot weather	chmgissum
to waken	Vnamun
the waves of the sea	Agwaskawwaun
to walke	Pauspawmear
weake	Kesshemauc
weary	Cuttoveen
weede	Attasqwas
to weepe	Nummaioh
welcome or the word of greeting	wingapo chamah. Notab:
it is well or wronge	wamattwwh
a well	Chcawooc
the west	Attagwassanna
wett	Neppe
what is your name	Cacutteveningdkeir
what is his name	Cacutteveningdyowk
what is my name	Cacutteveningdnear
what is this, or what call you this	Caqwaih Cacutterwaasyowk.
when	Tanoo chuik
where haue you bene	Tamowaam
to whet	Nussesseqwus
whetstones	Aphohomins
wheat	Powttows
a wheat plomb	Assessem
white	Opaivwh
to whistell	Qweisgwesun
a whiting	Vtteitsouk
the small wind	Rowhsummvwh
a great wind	Mahgwaih
wide or great	Rummotaihwh
a wife	Noungass
a wing	Vttaconiac
to wipe ones nose	Cheiscumemun
to winke	Inssungwaren
a widgin	Ponomaws

will you

Sheet 15.

Key to sheet 16

W

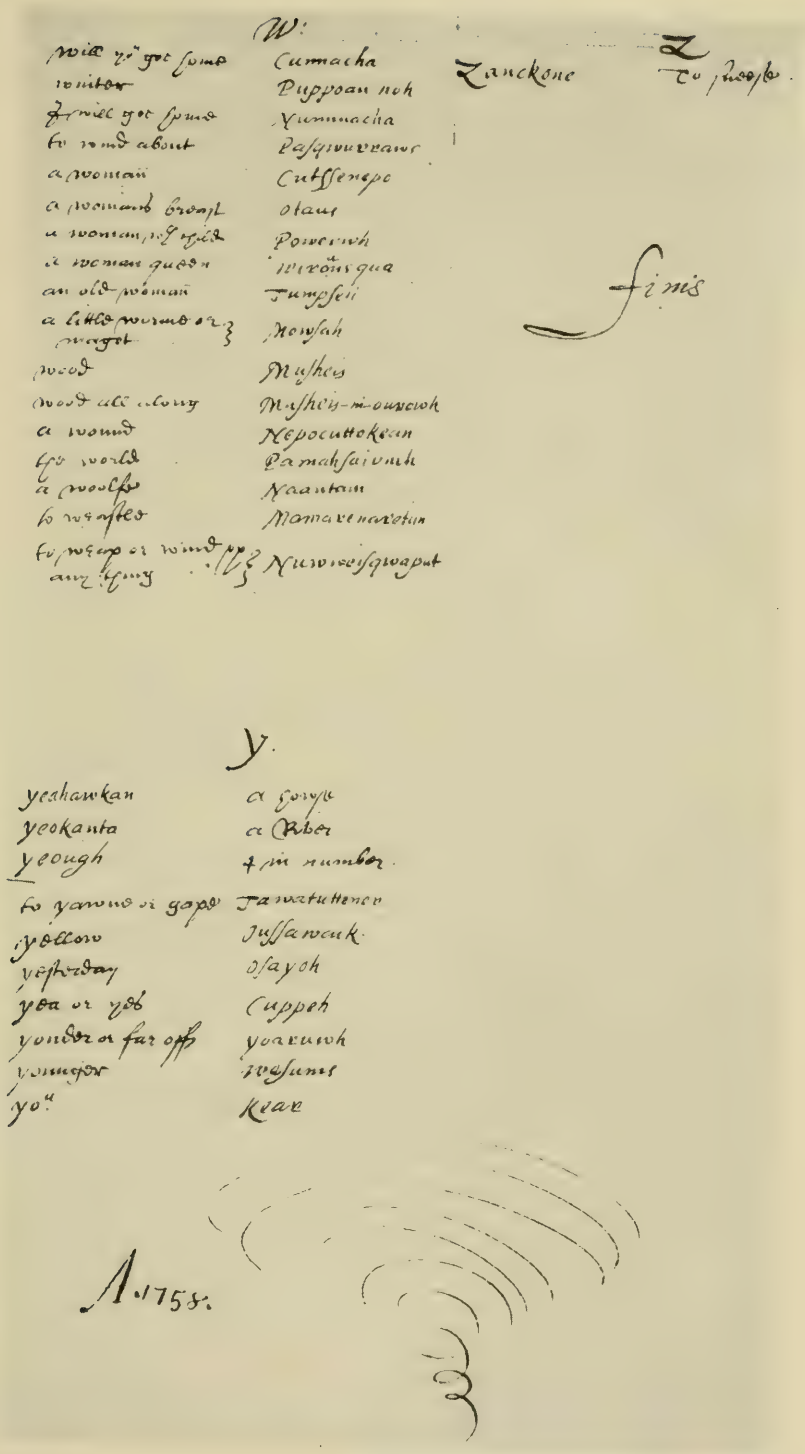
Will you goe home	Cunnacha
winter	Puppoan noh
I will goe home	Nunnuacha
to wind about	Paſqwurraws
a woman	Cutſſenepo
a womans breast	otaue
a woman with child	Powevwh
a woman queen	Wiransqua
an old woman	Tumpſeis
a little worme or magot	Mowſah
wood	Muſheis
wood all along	Macheis-ni-ourewh
a wound	Nepocuttokean
the world	Pamahſaivmh
a woolfe	Naantam
to wrastle	Mamarenarotun
to wrap or wind up any thing	Nuwweiſqwaput

Y

yeahawkan	a howse
yeokanta	a Rver
yeough	4 in number
to yawne or gape	Tamatuttener
yellow	Ouſſawenk
yesterday	Oſayoh
yea or yes	Cuppeh
yonder or far off	yoaruwh
younger	weſums
you	kear

Z

Zanckone	to sneese



W:

will yᵘ get some	Cumacha
water	Puppoan noh
I will get some	Yunnacha
to wind about	Pasqwuvrawr
a woman	Cutssenepo
a womans breast	Otaus
a woman with child	Powerwh
a woman queen	Wicônsqua
an old woman	Tumpseii
a little worme or maggot	Nowsah
wood	Mushes
wood all along	Mushcis-in-ouwcwh
a wound	Nepocuttokean
the world	Pamahsaiuuh
a woolfe	Naantam
to wrestle	Mamarenaretun
to wrap or wind up any thing	Nuwicesqwaput

Z

Zanckone	To sneeze.

finis

Y.

yeshawkan	a gorge
yeokanta	a River
yeough	4 in number.
to yawne or gape	Tawatuttenen
yellow	Jussawauk.
yesterday	Osayoh
yea or yes	Cuppeh
yonder or far off	yoarunh
younger	Wesumes
yoᵘ	Keae

A. 1758.

Sheet 16.

SEMANTICALLY CLASSIFIED LISTS OF STRACHEY'S VOCABULARY

The assembling in lists of words of related meaning taken from Strachey is a new departure. Strachey's vocabulary is found to cover practically all terms of the language, and the writer has grouped these terms in lists according to related meaning, so that they will stand out more clearly to the reader. After each entry the number is given of the vocabulary sheet from which the entry is taken. The spellings by Strachey frequently vary and are to be regarded as approximations.

PHENOMENA

WORLD

Pamahſaivmh, world, 16

EARTH

Cheipſni, earth, land, 9
Aſpamun, earth, 5
Ottawn, earth, 5
Pttawin, the ground, 7
Racaioh, sand, 13
Romutton, mound, 8
Pomotawh, hill, mountain, 8
Shacahocan, stone, 14
Mamansk, little stone, 14
Sawwone, salt, 13
Mataſsañ, copper, 4
oſawas, brass, literally the yellow one, 3
Mennumahgue, island, 14
Muſſavan, town, 14
Kaaſun, village, 15

WATER

Suckquohana, water, 13
yeokanta, river, 16
Meihsutteraſk, creek, 4
wouſsicket, a running brook, 15
yapam, ocean, 13
Peihtoah, foam, 6
Komeyhon, rain, 8
Coan, snow, 13
oreih, ice, 8
Mamman, cloud, 4
Arrahgwotuwh, cloud, 4
Quannacut, rainbow, 11

AIR

Raraſcaun, air, 2
Arrokoth, sky, 2
Kÿkeÿthamots, wind, 9
Roſsoun, wind, 11
Rowhſunnvwh, breeze, 15
Mahgwaih, great wind, 15

ASTRONOMY

Keſhowſe, sun, 14
Nepauſche, sun, 10
vmpſquoth, moon, 15
Suckimma, new moon, 11
Attaugwaſſowk, star, 14

FIRE

Boketawgh, fire, 2
Mohcatois, fire coal, 6
Accecow, spark, 6
Pahqwaua, spark, 6
Kekepemgwah, smoke, 15
Pungue, ashes, 2

LIGHTNING

Kecuttannowas, lightning, 9
Petacqueth, thunder, 11

CARDINAL DIRECTIONS

vtcheiks, north, 11

PLANT CORPOREAL

GENERAL

Meihtus, tree, 14
Mehteqweins, grass, 7
wapapammdgar, vine, 15
Maaugwipacus, leaf, 9
Amenacarac, seed, 13
onacaugs caunomen, fruit-pit, 7
Pickewh, pitch of the Virginia maple, 7
Vtchapoc, root, 13

PLANTS

Accondews, blueberry, 3
Apooke, tobacco, 2
Amkoming, poisonous flower the fruit of which is a kind of black cherry, 2
Anaskomens, acorn, 2
Aſearaſqwus, seaweed, 13
Aſſeſſein, wheat plum, 15
Aſinimins, walnut, 15
Aumboik, thornbark, 14
Cakeſqus, rush, 13
Caumdgus, bramble, 3
chechinquamins, evidently chinquapin oak, 11
Eſkawwaſcus, sedge, 13
Mahawke, gourd, 10
Maracah, native plant called apple, 2
Marakimins, wild grape, 7
Matakuſke, pricklypear leaf, 10. [This is the northeasternmost term for pricklypear which is on record.]
Mauhſaan, nettle sp., 11
Meroke, juniper, 10
Muſkimnis, mulberry, 10
Muſksſkimmins, strawberry, 10
Nehſaakah, reed, 11
Opomens, chestnut, 11
Pickuts, balsam, 11
Peccataas, bean, 2
Puſſaqwenibunanieindg, rose bush, 13
weihkippe is, wild hemp, 8
Paangahtumuns, hazel, 7
Pichanins, plum sp., 11

CORN

[The corn plant and its parts evidently have a large vocabulary in the Virginia Indian language, of which vocabulary Strachey furnishes traces.]

Pacaſſac, corn plant, 7. Strachey gives Peccataas for bean and Poketaws for wheat.
Pocuntavhca, corn ear husk, 8
okiſher, corn ear cob (?), 3
Rokohamin, ground-up parched corn, 11
yſketehamun, corn meal, 10

ANIMAL CORPOREAL

GENERAL

wuſkan, bone, 3
weineb, marrow, 10
Ahpewk, feather, 6
Mequance, long feather, 6
wawirak, horn, 11
Owaugh, egg, 11

HEAD

Mmabuckkam, head, 10
Mexerſe, head hair, 7
Muſkam, forehead, 10
Muſkiendg, eye, 5
Meſkewe, nose, 10
Makigue, mucus, 10
Metawce, ear, 10
Mettone, mouth, 10
Mehkewh, beak, 3
Meratsno, tongue, 10
Mepit, tooth, 10
Naſſhaih, lip, 9
weihſatonowans, beard, 2

TRUNK

Vegwantaak, throat, 15
Mutson, milk, 10
Otakeiſheheis, bowels, 7
Pocohaac, penis, 11. [A little earlier Strachey gives this word as meaning awl, pin.]
Vtohowwah, testicles, 14
Muttusk, vulva, 5
wuſhaqwun, tail, 14

LIMBS

Mackatahone, arm, 10
Meiſquan, elbow, 14
Meihtinge, hand, 7
Meſcot, leg, foot, 10
Apome, thigh, 2
Mekense, digit nail, 10

ANIMALS

GENERAL

Perhaps there is no general word for animal.

LOW FORMS

Mowſah, worm, maggot, 16

CRUSTACEANS AND SPIDERS

Assahampehooke, lobster, 2
Tuttaſcuk, crab, 4
Ohtindge, crab claw, 4
Strachey does not give the word for spider, but gives Nuttaſsapec, cobweb, 4.

TICKS AND INSECTS

Metacun, louse, 9
Nuttaqwon, flea, 6. (Apparently the same word as the word for louse.)
Poengwus, gnat, 7
Mowchesoh, housefly, 6
Tatacaunſhewah, grasshopper, 7
Manaanggwas, butterfly, 3
Mohwhawk, moth, 10

MOLLUSKS

Pomahaum, snail sp., 13
Tſhecomak, mussel shell, 10
Vſaſgwoik, pearl mussel shell, 11
Cauaih, oyster, 11

FISHES

Fish in general is called Nammais, fish, 6. Woskeqwus, gill, 7. Wÿhcats, fin, 6. Wooch, roe, literally eggs, 4.
Muſſaangegwah, maneater shark, 10
Aſcamuuk, eel, 5
Rahtaios, lamprey, 9
Cuppotoon, sturgeon, 14
Vttacomuck, cod, 4
Tatamaho, gar, 6
kÿhtoroon, pike, 11

AMPHIBIANS

No name of an amphibian is recorded by Strachey.

LIZARDS

Vtacaſkis, lizard sp., 9

SNAKES

Reihtaſcook, adder, 2. The last syllable evidently means snake in general.

TURTLES

Commotins, turtle sp., 4
accomodemſk, turtle sp., 14
Torocuppewk, sea turtle, 14

BIRDS

Tſhehip, bird in general, 3

Duck Group

Piſcoend, duck sp., 5
Ponomaws, widgeon, 15
Rowgwawh, sheldrake, 13

Goose Group

Kahanqoc, goose sp., 7
Marahungoc, goose sp., 7
Kahunge, goose sp., 9
Opykerough, brant, 11
wopuſſouc, swan, 14

Hawk Group

Tatacaumevan, sparrow hawk, 13
Opatenaiok, eagle, 5

Owl Group

Quangatarask, owl sp., 11

Turkey Group

Momnugh, turkey, 10.
Oſpanno, turkey cock, 15.

Pigeon Group

Towaigwoins, pigeon, 11
Quanonah, wood pigeon, 11

Crow Group

Ohawas, crow, 4

Cuckoo Group

wimpenton, cuckoo, 14

Robin Group

Cheawanta, robin, 4

Crane Group

Vſsac, crane, 4

Gull Group

coiahgwus, gull sp., 7

Parrot Group

Maſkawhinge, parrot sp., 10. Evidently the Carolina parakeet is meant, it being the only bird of the parrot group in the region.

Marten Group

Moschwacus, marten, 10

Insufficiently Identified

Ahshowcutteis, bird sp. having red under the wings, 3
Oſaſianticus, a bird like a divedapper, 3
ceumeats, bird sp., 6
meihteams, bird sp., 6
Mattaſſunutchooke, bird sp., 10
Ockquins, bird sp., 11
Tſhoegetewh, bird sp., 6

MAMMALS

Marsupial Group

Aposoum, opossum, 2

Cetacean Group

Potawaugh, porpoise, 11

Deer Group

Rapanta, vension, 11.
Monattocow, fawn, 6.

Squirrel Group

Mouſſomko, ground squirrel, 10
Aioſsapanÿk, flying squirrel, 6

Rat Group

Aotawk, rat sp., 11

Rabbit Group

wÿheutteis, hare, 7

Beaver Group

Pohkewh, beaver, 11
Cuitak, otter, 11
oſaſquws, muskrat, 10

Bear

Meſseionaause, bear, 10

Dog Group

Attemoos, dog, 5
Neantam, wolf, 16
Ouxe, fox, 11

Cat Group

Vttacawoi, mountain lion, 9

Mole Group

Momuſiken, mole, 10

Skunk Group

Attowrin, skunk, 4

Raccoon

Arathkone, raccoon, 2

Inadequately Described

vtchoonggway, mammal sp., 4

AGE–SEX

Neckaun, child, 9
Vfcapess, boy, 3
Vfquaſeins, girl, 7
Nimatewh, man, 10
Cucheneppo, woman, 10
Ramerumuwh, old man, 11
Vtumpſeis, old woman, 11

STATUS

weroance, chief, 9
weransqua, woman chief, 16

RELATIONSHIP TERMS

PATERNAL

Nows, father, 6
Kiok, mother, 8
Amoſens, daughter, 2

PATRUAL

Ariqwoſſac, aunt, 2

FRATERNAL

Nemat, brother, 3
Covſmuc, sister, 3

MARITAL

Noungaſs, wife, 15

RELIGION

Ahone, God, 2 [literally, strong]
Rawottonemd, God, 7
Mounſhagwatowh, heaven, 7
Riapoke, Devil, 5
Popogwvſsur, hell, 8
Netſhetsunh, soul, 13

PERSONAL NAMES

Nanamachavwk, name of the Roanoke chief, 9

PLACE NAMES

Chessiopiock, Chesapeake Bay, 1
Paquachowng, waterfalls at the upper end of the Kings [James] River, 5
Tſenakcommacah, Virginia, 15

TRIBE NAMES

[The race name for white man appears in the song recorded by Strachey.]

MATERIAL CULTURE TERMS

Adornment. Cutaantaquapiſsun, headdress of red-dyed deer hair, 4.

Awl. Pocohaac, awl, 2; Pocohaac, penis, 12. Compare perhaps the name Pocahontas, said to mean "the little wanton."

Ball. Aitowſ, ball, 2

Broom. Tſhekehicawwons, broom, 3

Canoe. Aquintayne, canoe, 2. Aquintayne manggoy, large ship, 2. Aomtan̄, canoe, 3. Muſsawwus, boat. Kayqmose, boat, 3, 8. Tſemacaus, paddle, 11.

Clothing. Puttaiquapiſson, hat, 11. Pocontath, girdle, 13. Puttamus, feather mantle, 5.

Pestle. Pocohaac, 12. (Written same as word for awl.)

Arrowhead, Raputtak.

Cordage. Pemanataon, string, 4. Peminah, rope. Peymmata, thread, 11.

Food. Apones, bread. Taccahoappoans, tuckahoe bread.

Furniture. Cawwaivwh, bed, 3. Petoacawin, bed, 3. Ahquaſs, pillow, 12.

House. yeahawkan, house, 16.

Implements. Pamiſac, knife, 9. Rekaſque, knife, 12. Tamohake, hatchet, 14. Cunſenagwus, Indian hatchet.

Mat. Ananson, rush mat, 7.

Musical instrument. Ahqwohhoac, drum, 5.

Net. Auſſas, net [a fish net is probably meant.]

Rattle. chingawwonauk, gourd rattle.

Bag. Poraſap, bag. vttamancoih, bag.

Tackle. Auketuttawh, fishhook, 6. Mowhkohan̄, fishhook, 10.

Tobacco paraphernalia. Apokan, tobacco pipe, 2. Chamange, Reconacke, tobacco bag, 4.

Utensil. Aucutgagwaſsun, copper kettle, 4. Outakan, dish, 5. Pocohaac, pestle, 12.

Walking stick. Nisake, walking stick, 10.

Weapons. Auhtab, bow, 5. Auppies, bowstring, 5. Asqweowan, arrow, 2. Raputtak, arrowhead. Pocosack, gun, rifle, 11.

AILMENTS

Headache, Kawmclirppaan, 7.

NUMERALS

Strachey records the numerals from 1 to 10, inclusive, with the exception of the numeral for 7, which he does not give. The numeral for 20 is also given by Strachey, and here. (The numerals are in italics and the numbers of the sheets in roman.)

Nekut, *1*, 10
Ninge, *2*, 10
Nuſſaugh, *3*, 10
yeough, *4*, 16
Parance, *5*, 13
Comatnige, *6*, 4
Nuſchawus, *8*, 10
Kykeytawc, *9*, 9
Koſke, *10*, 9
Ninge poke, *20*, 10

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The Sun Dance of the Northern Ute

By J. A. JONES

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THE SUN DANCE OF THE NORTHERN UTE

By J. A. Jones*

INTRODUCTION

The problem of this paper is to determine what role the Sun Dance has played in Ute culture. The Sun Dance has been selected as a focal point from which to discuss Ute culture because it is now the principal, vital native feature remaining. Its adoption in 1890 marked a period of culture strain. From that time, attitudes and values of the old culture were attached and integrated into the ceremony until now, in another period of culture strain, the Sun Dance has become a symbol of revivalism. It is apparent, therefore, that the history of the Sun Dance among the Ute is essentially the history of Indian-White contact, and the social, economic, and political insecurities which have arisen among the Ute from this contact.

The Indians involved in this contact situation are principally the Northern Ute bands now located on the Uintah and Ouray Indian Reservation in Duchesne and Uintah Counties of northeastern Utah. These bands are defined today as the Uintah, White River, and Uncompahgre, and number about 1,500 people. In the aboriginal state, however, there were other, smaller band divisions, and their range extended far beyond the limits of their present reservation.

Steward postulates:

> . . . that the ancestors of the recent Intermontane Shoshoneans were formerly in the Western Great Basin and in southern Nevada, where, through contact with a Basket Maker, or Derived Basket Maker culture, they acquired . . . [certain] traits, and subsequently they spread throughout the Intermontane area [Steward, 1940, pp. 454–455].

---

*I wish to express my thanks to those who aided me in the preparation of this monograph.

Dr. Florence Hawley, heading the University of New Mexico Summer Field Session in Ethnology for 1948, was responsible for my introduction to the Northern Ute, and helped in guiding my field work during that summer. I am indebted to Dr. William Duncan Strong for securing financial aid from Columbia University which enabled me to continue my field investigations among the Northern Ute during the summer of 1949. To him and to Dr. Alfred L. Kroeber I am grateful for helpful suggestions regarding the manuscript. My thanks go to Dr. Dimitri B. Shimkin for lending me his manuscript on the Wind River Shoshone Sun Dance and permitting me to quote from it. I am particularly grateful to Dr. Julian H. Steward, whose scholarly guidance was invaluable in the preparation of this monograph. I wish also to express my gratitude to the individual Northern Utes and to the Indian Service personnel of the Uintah-Ouray Reservation who provided much of the material of which this monograph is composed. Finally, I am indebted to my wife, Lilian Fuller Jones, for her assistance and encouragement, both in the field and in the preparation of the material for publication.

Before the Shoshoneans spread to the East, however, a developmental Pueblo culture disseminated traits over a considerable area. After the Pueblo peoples disappeared in the northern periphery and retracted throughout the Southwest, Shoshoneans, who are presumed to have been in western and southwestern Nevada, perhaps already differentiated into their present linguistic divisions (Northern Paiute, Shoshone, and Ute-Chemehueve), expanded throughout their recent territory (Steward, 1940).

Some data exist on the locations of some of these small bands of Ute-speaking Indians in the early documentary material. Steward (1937) and Cooke (1938) have made tentative reconstructions based on these early sources. My research tends to corroborate their findings generally, but some new evidence may be added to fill out the picture. The accompanying map (fig. 13) is based on a combination of Steward's, Cooke's, and my data.

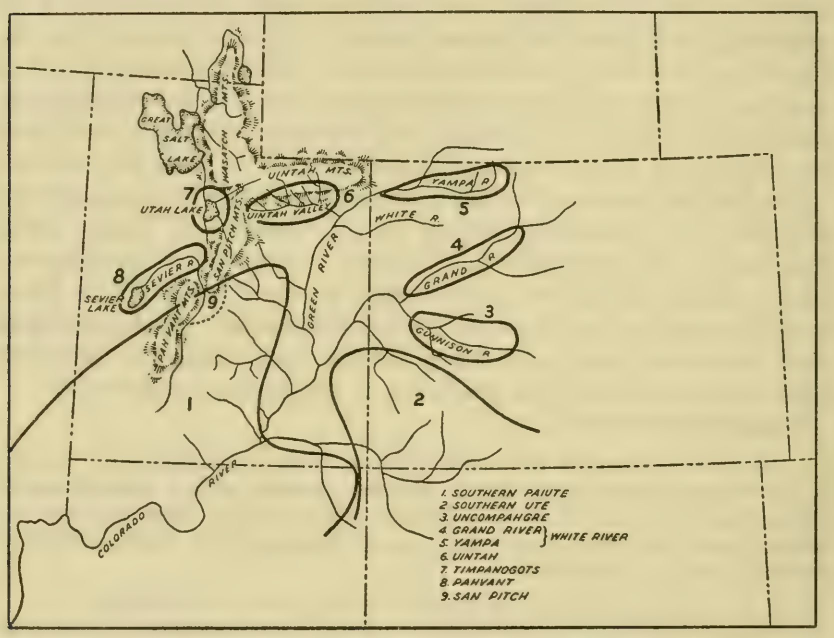
GREAT SALT LAKE
WASATCH MTS.
UINTAH MTS.
UINTAH VALLEY
UTAH LAKE
SAN PITCH MTS.
SEVIER R
SEVIER LAKE
PAH VANT MTS.
GREEN RIVER
WHITE R.
YAMPA R
GRAND R
GUNNISON R
RIVER
COLORADO
1
2
3
4
5
6
7
8
9
1. SOUTHERN PAIUTE
2. SOUTHERN UTE
3. UNCOMPAHGRE
4. GRAND RIVER
5. YAMPA
WHITE RIVER
6. UINTAH
7. TIMPANOGOTS
8. PAHVANT
9. SAN PITCH

FIGURE 13.—Distribution of Northern Ute groups.

The eastern division of the Ute, now generally called the White River band, seems to be a consolidation of two bands known as the Yampa and the Grand River. The consolidation was completed around 1879 under reservation conditions at the White River Agency in Colorado (Ute Commission, 1879, p. 282). Previous to White contact, these bands ranged along the White and Grand Rivers in

Colorado and as far east as the South Platte, which was Arapaho territory.

The Uncompahgre, or Tabeguache, band of Ute ranged to the south of the Yampa and Grand River bands. Their territory lay between the Colorado and Gunnison Rivers (Ute Commission, 1881, p. 384). They moved to the Ouray Reservation, just south of the Uintah Reservation in Utah, in 1881.

The country south of the Colorado River was inhabited sparsely by the Southern Ute bands as far south as the headwaters of the Cimarron along the border of New Mexico (Clark, 1885, p. 391). The Colorado Plateau was a natural boundary which prevented the Southern Ute from having much contact with the rest of the Ute. Steward says,

> Most of the Colorado Plateau was either too high or . . . too dissected with narrow and often impassible canyons and gorges to have favored human occupation [Steward, 1940, p. 448].

And again,

> . . . some Ute in Colorado who found the bison comparatively inaccessible, remained very much like the western (Nevada Shoshone) people [Steward, 1940, p. 496].

It is a matter of historic fact that the Southern Ute did not take part in the series of culture changes that their neighbors to the north and west of them did, and they have not been included in this paper for that reason.

The northern division of the Ute was the Uintah band. Their range was about 150 miles long by 100 miles wide by 1825, the center of their territory being the confluence of the Uintah and Green Rivers, in the Uintah Basin (Dale, 1918, p. 151; Forney, 1859, p. 732). After acquiring the horse they roamed this area in several groups, all called "Utahs" by the Whites (Hatch, 1862, p. 350). Perhaps these groups would have crystallized into stable bands with territorial rights had it not been for the restrictions of reservation life that were imposed upon them.

Escalante saw no inhabitants of the Uintah Basin when he went through, but he did see tracks of men and horses and fires from hunting camps in that area. His guide told him they could be either Ute or Comanche, both of whom hunted in the Basin. The Timpanagos that Escalante described at Utah Lake in 1776 have been identified as Uintah bands by Cooke and Palmer (Cooke, 1938, p. 628; Palmer, 1928, p. 39).

Chief Walker was the leader of Utes living around Utah Lake, and called Timpanagos in the 1840's before the Mormons came in (Fremont, 1887, vol. 2, p. 386). It is possible that in the 70 years that elapsed between Escalante's visit and Fremont's that a new people could have moved into the area around Utah Lake and become Timpanagos (a word descriptive of the area), but it seems unlikely. Escalante's Timpanagos and Walker's Timpanagos may well have been the same people.

The Timpanagos were displaced from the shores of Utah Lake and moved to Spanish Fork where a farm was set up to take care of them (Tourtellotte, 1870, p. 606). They became scattered among the other bands and ceased to exist as a separate band. By 1866 most of them were on the Uintah Valley Reservation, where they were numbered with the Uintah (Head, 1866, p. 124).

The western division of the Ute consisted of the Sevier Lake or Pahvant Ute, the Sanpitch or Sampit Ute, and the Fish Ute. The first mention of the Pahvant appears in Russell's diary. He found them at the southeast tip of Utah Lake in 1841, and said, "They had fine horses and lodges, and were partial to the rifles of the White man" (Russell, 1921, p. 122). When the first contact with the Mormons occurred, the Pahvant were led by a man named Kanosh, who welcomed the help of the Mormon missionary, Jacob Hamblin, in his efforts to teach the Indians agriculture. At that time they were camped along Corn Creek in Millard County, Utah (King, 1947, p. 32).

Most of the Pahvant moved to the Uintah Reservation in 1867 (Head, 1867, p. 174), but some remained behind. Steward says "a small remnant of Pahvant Ute live at Kanosh, Utah" (Steward, 1938, p. 222).

The Sanpitch band also were possibly Ute, but from the descriptions of them they must have taken on Plains trappings very late. Ferris describes them as of 1844 as "the most miserable human beings we have ever seen" (Ferris, 1940, p. 410). At that time they were without horses. Thirty years later, Hurt describes them as Utes, from the dialect they speak, "though they are greatly inferior to them in many respects." They lived on the shores of Sevier Lake and along the Sevier River (Hurt, 1876, p. 460). Dialect differences from Southern Paiute are possibly not great enough to differentiate them, and certainly they resemble them culturally more than they do the Ute. It is possible that they should be reclassified as Southern Paiute. Head says they moved to the Uintah Reservation in 1866, where we may assume they lost their band organization in the same way that the Timpanagos did (Head, 1866, p. 124).

The Fish Ute resided aboriginally in the vicinity of Fish Lake (Gottfredson, 1919, p. 327) or "Red Lake south of the She-be-retches" (Tourtellotte, 1870, p. 606). Palmer places them on Red Creek, an upper tributary of the Paria River (Palmer, 1928, p. 48) but this may be too far south. They are first mentioned in the

Reports to the Indian Commissioner in 1867 by Head (1868, p. 609), who says they numbered 100. From the Indian names for the Fish Ute band that Steward and Cooke received from their native informants, Cooke was able to identify this band as the one which was led by Black Hawk (Cooke, 1938, p. 692). Head states in 1869 that "The principal chiefs, including Black Hawk, for many years engaged in active hostilities, are among the most industrious Indians upon the reservation" (Head, 1869, p. 699). This places the leader of the Fish Ute on the Uintah Reservation, and since no other record is to be found of the destiny of the Fish Ute, it appears that they were absorbed as were the Pahvant, Timpanagos, and Sanpitch by the Uintah. If the identification with Black Hawk is faulty it is possible that these people were Southern Paiute rather than Ute, although we know so little about the Fish Ute that we cannot even say (apart from the identification as Black Hawk's band) that they had horses.

The Cum-um-bah, or Weber Ute, are sometimes classified as Ute, and sometimes as Shoshone. Hurt described them as "a hybrid race between Shoshonees and Utahs" (Hurt, 1876, p. 460). In 1867 Head reports on the Weber Ute as follows: "This tribe is formed from members of different Utah and Shoshone bands, the Utah element largely predominating in their language" (Head, 1867, p. 174). At the time of the coming of the Mormons, they occupied the territory which included the site of present Salt Lake City (Alter, 1944, p. 55). This was the area which James Bridger, famous frontiersman and scout, told Brigham Young was "something of a no-mans-land between the Utes in the South and the Shoshones in the North" (Clayton, 1921, p. 278).

According to figures supplied by F. H. Head, superintendent of the Utah Agency in 1866, there were about 600 Weber Utes at that time. He states, ". . . these Indians are the most worthless and indolent of any in the territory. Their land is nearly all occupied by settlers, among whom they beg their maintenance." He lists their horses at only 50 (Head, 1866, p. 123), showing either recent acquisition or lack of need of horses in the food quest. It is apparent that at this early date, the Weber Ute had already reached that stage of dependence on Whites that is characteristic of rapidly deculturating Indians.

Whether the Weber Ute were true Ute, or actually a coalition of individual Ute and Shoshoni-speaking families, no evidence may be found that they ever joined the Utes living on the Uintah Reservation. Several definite statements appear in the Reports to the Commissioner of Indian Affairs that they refused to do so (Head, 1866, p. 123; Tourtellotte, 1870, p. 605).

The cultural background section (pp. 212–239) is organized into historical periods showing the factors at work that caused the changes in Ute culture which made it what it is today. The first period discussed is the pre-horse period. The second is the post-horse, pre-White contact period. The third is the White-contact period, beginning in 1847 with the coming of the Mormon settlers. The fourth is the reservation period, beginning in 1866 with the end of the Indian-Mormon wars. The fifth is the reorganization period, beginning in 1937 with the adoption of the Ute Constitution and By-laws for the governing of the tribe under the provisions of the Wheeler-Howard Act.

These five historical periods are set off in this way to underline the changes in Ute culture. These changes are most marked in subsistence economy, and the results of these changes are to be found in every facet of the culture. Economic insecurity led to social insecurity, and the inconsistent Government policies toward the Indians has led to political insecurity without alleviating either the economic or social conditions. These insecurities, in turn, have resulted in a sullen uncooperativeness on the part of the Indians themselves, which makes ethnographic research among them very difficult. More important, however, is the reaction against White culture which has come about in recent years. The Sun Dance has become a symbol of the native culture, and a revivalistic nativism is growing up around it. This development is not restricted to the Ute, and some discussion of the scope and form of this phenomenon will be taken up in the third section, pages 252–254.

It was not possible to collect quantitative data to support the hypothesis that there is considerable insecurity among the Ute stemming from the existing economic, social, and political conditions. Such data were not available to me. Psychological tests which might produce quantitative evidence of any such widespread anxieties have never been taken of the Northern Ute. Figures on actual per capita income or consumption of food have not been compiled. In my research, nevertheless, I questioned numerous individuals who informed me that they, and others of their acquaintance, existed at what may only be termed an extremely low standard of living. Personal observations bore out these statements.

CULTURAL BACKGROUND

PRE-HORSE PERIOD

The cultural background of the Ute may be divided into five historical periods in order to illustrate the culture change which resulted in the adoption and retention of the Sun Dance.

The first period may be designated as the pre-horse period. What the culture was previous to the introduction of the horse must be at least partially conjectured. As Steward said:

> Northern Shoshone and Ute customs appear to have been so completely revamped after the acquisition of the horse that it is doubtful whether their pre-horse culture will ever be known. There is much reason to believe that these people formerly resembled their western kin, but full proof of this is lacking. [Steward, 1940, p. 477.]

The "reason to believe that these people resembled their western kin" is the restricting influence of the natural environment which the Ute shared with the Nevada Shoshone. The whole intermontane area is characterized by high altitude, dry climate, and hence restricted quantities of edible plant and animal species, and limited possibilities for agriculture. A comparison of Lowie's (1924) material on the Ute, and Steward's (1941) on the Nevada Shoshone bears out the fact that in the main elements of culture, such as crisis rites, shamanism, and games, as well as in some features of material culture, the Ute continued to resemble the Shoshone even after the introduction of the horse.

The elements described below as being pre-horse do not include two ceremonies, the Bear Dance and the Sun Dance. The Bear Dance seems to have originated among the Northern Ute, and has had a spread south and west from the place of origin in the last 70 to 80 years (Spier, 1928, p. 273). The Sun Dance came into Ute culture during White-contact times, and has just recently begun to spread to Great Basin tribes (Steward, 1941, p. 266). These ceremonies could not be held unless a surplus of food stuffs existed to feed a large number of people, and such surpluses occurred in the Great Basin very rarely. For that reason, the distribution of cultural elements not dependent on a surplus of food could be expected to be different from the distribution of these two ceremonies.

Some of Lowie's data on the Ute resemble the material that Steward gathered from the Western Shoshone. This distribution of culture elements suggests that previous to the acquisition of the horse the Ute resembled their western neighbors culturally. In discussing crisis rites, Lowie takes up birth, adolescence, marriage, and death.

> A woman in travail assumed a kneeling position and clung to a big stick planted in front of her. One female attendant clasped her around the waist, squeezing her, another made the delivery, cut the navelstring, and washed the infant, who lay about for a month or a month and a half, when a cradle board was made. The morning after the birth the father must run around in the hills. He will break a branch, run, place it on a tree, break another limb, run on, and continue in this fashion all day; otherwise he would never catch any deer. . . . There are other regulations to be followed. Neither parent must use his fingers to scratch himself lest they leave black marks; instead a wooden scratching stick is

> carried in the braid or other part of the hair for one month. Further it is forbidden for both to rub their eyes during the natal period lest their eyes get sore or even become blind. . . . The woman must remain indoors for a month and never drink cold water or eat meat; these taboos extend to her husband, but only for four days. [Lowie, 1924, p. 22; see Steward, 1941, p. 314.]

Adolescence rites were observed for women, but not for men.

> When a girl menstruated for the first time, an old woman made her take a bath and washed her thoroughly. She had to remain alone in a blood lodge for ten days, when she was again washed by the old woman. Thereafter her period of seclusion was shortened by a day every successive month until it was reduced to the normal span of three days. [Lowie, 1924, p. 273].

The menstrual hut was still in vogue when Lowie visited the Uintah in 1912 (Lowie, 1924), and when Steward was there in 1932 (personal communication). Menstruating women were not allowed to eat meat for fear their husbands would have bad luck in the hunt. They were never allowed to attend a dance, although social intercourse was not completely denied them. The young men were allowed to court women in the menstrual huts, although cohabitation at such a time was considered dangerous to the health of both sexes (Lowie, 1924, p. 273; Steward, 1941, p. 317).

Marriage was a casually arranged affair among the Ute. According to Lowie, a girl's father generally approached a prospective husband for his daughter and invited him to move into the household. Residence was usually matrilocal for awhile, but later married couples usually lived with the husband's relatives (Lowie, 1924, p. 275; Steward, 1941, p. 311).

Death and burial customs show the same marked similarity between eastern and western Basin tribes. The property of the dead person was either buried with him or destroyed on his grave (Lowie, 1924, p. 280; Steward, 1941, p. 319). Relatives mourned and cropped their hair.

Shamanism was widely spread throughout the Basin, among the Ute as well as other Shoshoneans. Lowie said:

> Some Shamans were good, others bad. The latter were sorcerers who caused people to fall sick. If several (good) shamans believed a certain bad shaman was responsible for an illness, the Ute killed the sorcerer as soon as his supposed victim died. This idea of killing a bad medicine man seems to be very fundamental with the Ute. Curing was accomplished by sucking and singing. Power to cure was received in dreams. (Lowie, 1924, pp. 191-192; Steward, 1941, p. 320).

Lowie mentions shinney and hand (guessing) games for the Ute, and Steward shows wide distribution of them over the rest of the Basin (Lowie, 1924, p. 257; Steward, 1941, p. 302).

In dress, Lowie mentions the rabbitskin robe, which was finger-woven from long strings of rabbitskin (Lowie, 1924, p. 216; Steward, 1941, p. 293). The shredded sagebrush covered, dome-shaped wickiup, Lowie says, is old Ute, while Steward gives it a distribution over the rest of the Basin (Lowie, 1924, p. 216; Steward, 1941, p. 293). The same distribution occurs for the sweat lodge (Lowie, 1924, p. 308; Steward, 1941, p. 284).

The Ute had both basketry and pottery. The pottery they used they dug out of old pueblo ruins in the area, according to my informants. Lowie said:

> Jim Duncan told me that among his people (Uintah) stone-boiling with baskets and pot boiling had been in vogue. The former was repeatedly referred to by Ute informants. [Lowie, 1924, p. 226; Steward, 1941, pp. 282, 291, 294.]

The basketry cradle, gathering baskets, pitched water baskets, trays, and the basketry hat were all known to the Ute. The Nevada also had winnowing trays, which were absent among the Ute (by 1912) (Lowie, 1924, pp. 241, 250; Steward, 1941, pp. 291, 295, 298).

Some subsistence activities of the Ute recall a pre-horse period. Lowie said that in late summer and fall

> . . . old women would go up the mountains in quest of berries, taking along willow baskets with a burden strap. On returning home they spilled the berries out on the ground and dried them, then put them back into the baskets, dug a big pit and put the berries in their containers into the ground, covering up the hole with dirt. In the winter when other supplies were lacking they would take the berries from the caches. [Lowie, 1924, p. 201; Steward, 1941, p. 281.]
>
> Rabbits were hunted communally; the Uintah used nets, made from bark fibre. . . . [Lowie, 1924, p. 199; Steward, 1941, p. 273.]

In the desert areas of western Utah, the transition to horse culture did not take place until White-contact times. Ferris found the Sanpitch in the desert area south of Utah Lake, in 1844, and described their condition in the following words:

> These are by far the most miserable human beings we have ever seen. The barrenness of their country, and scarcity of game, compel them to live by separate families, either in the mountains, or in the plains. In the latter, they usually select the most barren places to encamp, where there is apparently nothing but sand, and wormwood or sage. Here, the women and children are employed in gathering grasshoppers, crickets, ants, and various other species of insects, which are carefully preserved for food, together with roots, and grass seed. From the mountains, they bring the nuts which are found in the cones of the pine, acorns from the dwarf oaks, as well as the different kinds of berries, and the inner bark of the pine, which has a sweet acid taste, not unlike lemon syrup. In the meantime, the men are actively employed in hunting small animals, such as prairie dogs, squirrels, field mice, and larger animals, or birds, which fortune sometimes places within the reach of their arrows. They likewise take fish with simple instruments. . . . The Sann-pitch are generally quite naked, though in some instances a small piece of skin is fastened before them. The women all wear a piece of skin, reaching from the middle to the knees, and instances are not uncommon where they possess a leathern shirt, but no other article of dress. They are extremely shy . . . [Ferris, 1940, p. 267.]

Ceremonies present a somewhat different picture in their distribution, and this brings up an interesting point for discussion. The Circle Dance or Round Dance is widespread throughout the Basin, but the Bear Dance seems to be aboriginal with the Ute, and present elsewhere in the Basin owing to recent borrowing (Lowie, 1924, p. 299; Steward, 1941, pp. 323, 324). The Ute ceremony is performed early in the spring in a circular enclosure. According to the traditional account, a bear gave the dance to the people, and the alleged object is to conciliate the bear species. Both men and women participate, facing each other, and dance to the accompaniment of music produced by scraping a notched stick until in the last night's activities one dancer falls to the ground from real or feigned exhaustion (Lowie, 1924, p. 299). The women choose male partners in an aggressive fashion, and it is the role of the males to be coy and diffident. The Bear Dance is essentially a mating dance, with the religious element of only minor importance (Steward, 1932, p. 273), but it is a manifestation of the widespread phenomenon of Bear Respect.

The question is raised: Why were the Ute able to hold a spring ceremony of this sort when other Basin peoples were not? Throughout the rest of the Great Basin, where the environment provided a very meager subsistence at best, the spring of the year was perhaps the hungriest season of all. Certainly no group living under such conditions would find itself in a position to hold a ceremony of the proportions of the Bear Dance when there was barely enough food to provide for a group the size of one extended family.

It is possible that the typically Basin subsistence items were more abundant in the Ute range than they were in the western areas where the Bear Dance was absent aboriginally. It is unlikely, however, owing to the nature of these items, that they would provide the necessary surplus to feed a greater than normal assemblage of people in the spring. It therefore follows that a considerable addition to typical Basin fare must have been available to the Ute. The meat of large game animals would have supplied this addition to their diet. These could have been deer, antelope, or buffalo, or perhaps a combination of these animals which wintered in the foothills of the Wasatch and Uintah Mountains, as did the Ute themselves. It was perhaps the higher level of subsistence afforded the Ute by the presence of large game animals which allowed the rapid development of horse bands organized around hunting among the Ute. It is a matter of historic record that the horse band developed among the Ute while their western kin led a foot-going, food-gathering existence until they were placed on reservations and learned agriculture.

POST-HORSE, PRE-WHITE-CONTACT PERIOD

Wissler (1914, p. 2) states that the Ute probably had horses as early as 1600. He bases this statement on the documentary evidence of early explorers that other tribes below the Platte and lower Missouri were well supplied with horses by 1682. Since the Ute, with the Comanche, Apache, Kiowa, and the Caddo were in contact with the Spanish in the Southwest at that time, Wissler believes that these tribes stole from the Spanish the horses with which they supplied the rest of the Plains.

Haines (1938, p. 436) says "horses spread simultaneously on both sides of the Rocky Mountains." She further gives documentation to show that the Cayuse, Nez Percé, Flathead, Blackfoot, and Crow all obtained their horses from Shoshone-speaking people. Her postulated dates for Plains tribes' acquisition of horses range from 1600 to 1700.

Nothing would be gained by reviewing the source material used by Wissler and Haines, because the first direct historical reference to the Ute occurs in 1776 in the Diary of Fray Silvestre Velez de Escalante. Escalante (Harris, 1909) and a companion explored part of the Great Basin in search of a route from Santa Fe, N. Mex., to Monterey, Calif.

In the entry for September 6, 1776, Escalante wrote—

> . . . Here were three Sabuagana huts from which came six men to our camp, and among them one who had just arrived from the land of the Commanches Yamparicas, where with four others, they had gone to steal horses. He said the Commanche had all gone away.

At that time, Escalante was at a location just north of the Gunnison River in western Colorado.

Escalante identifies the Sabuaganas as Ute, and mentioned that some Timpanagos were visiting them from Utah Lake (Harris, 1909, p. 146). Therefore, the eastern Ute had horses by 1776, and used to obtain them by stealing them from the Comanche. The Timpanagos were being raided at that time by Northern Shoshone, who had horses. It is possible that the Timpanagos visiting the Sabuaganas had come seeking horses with which to fight the Northern Shoshone.

Escalante did not mention horses in Western Utah, and it is possible that, except for areas around Utah Lake, Sevier Lake, and the Sevier River, horses arrived very late. The areas just mentioned were all occupied by Ute, and had enough grassland to support horses. The northern bands of Ute acquired the horse and horse trappings of the Plains probably by 1800. Ashley met the Uintah in 1825, and described them in this manner:

> These people were well dressed in skins, had some guns, but armed generally with bows and arrows and other such instruments of war as are common among

> the Indians of the Missouri. Their horses were better than Indian horses generally are east of the mountains, and more numerous in proportion to the number of persons. [Dale, 1918, p. 151.]

The same year Ashley made a camp on the Green River about 10 miles below Brown's Hole on the site of an old Ute camp—

> . . . where several thousand Indians had wintered during the past season. Their camp had been judiciously selected for defense, and the remains of their work around it accorded with the judgment exercised in the selection. Many of their lodges remained as perfect as when occupied. They were made of poles, two or three inches in diameter, set up in circular form, and covered with cedar bark. [Dale, 1918, p. 144.]

It would have been impossible for such a large gathering of people to live together without horses. With horses, the stored surpluses of dried meat, berries, and seeds could be transported to a central location. A camp of the size described by Ashley would have been quite safe from the attacks of war parties, which was an added security.

Acquisition of the horse seems to have been responsible for the development of the band in the Basin. Where the horse was, there also was the band. As Steward (1937, p. 632) says, "It is an empirical fact that the western limit of the horse was also the western limit of the true band." Where grazing conditions did not permit the spread of horse culture, the people continued to live in small, bilateral family groups as among the Sanpitch described above.

The horse changed the subsistence economy of the Ute by making it possible to use new methods of hunting which resulted in more food. Communal bison hunts in the Basin undoubtedly were responsible for the decrease of the buffalo there. Fremont (1887, vol. 2, p. 218) says the buffalo were extinct in northern Utah by 1832. Hurt (1876, p. 461) gives the date as 1825. With the extinction of the bison in the Ute range, either bison had to be hunted east of the Rockies, or the communal hunting techniques had to be adapted to other game in order to support groups of people larger than single families. It seems that both of these developments occurred.

Lowie (1924, p. 199) mentions the hunting of rabbits on horses by the surround method. This was probably applied to deer and antelope as well, as occurred among the Gosiute (Steward, 1938, pp. 34–36). Bison hunting took the Ute into the Plains east of the Rockies where they trespassed on Arapaho and Cheyenne hunting grounds. This led to enmity between the Ute and these Plains tribes, which was expressed in typical Plains fashion. War parties raided east and west, and the Ute soon learned the Plains war patterns (Hurt, 1876, p. 461).

The importance of warfare led to the importance of war leaders. According to Clark, ". . . the recurring wars that then took place between the Ute and other tribes of Indians brought to light the fighting qualities of the warriors, and the bravest men were made chiefs" (Clark, 1885, p. 390). This process of elevating warriors to positions of prominence within a band was noted as early as 1776 by Escalante (Harris, 1909, pp. 179–183), but the great impetus given warfare as an item of cultural importance probably occurred 50 years later with the extinction of the buffalo on the Ute range. Horses were wealth, and when the Ute possessed large enough herds to make the effort profitable, it is natural that other tribes would try to steal horses from them. Their intermittent warfare with the Wind River Shoshone is attributed to horse-stealing raids about 1834, by Clark (1885, p. 386).

Other accouterments of Plains culture acquired by the Ute after the introduction of the horse were the tipi, which replaced the wickiup (Lowie, 1924, p. 220), and the increased use of animal hides for dress, and containers. Pottery and basketry became less important in the culture (Lowie, 1924, p. 216). The Ute did not adopt the travois, however, which was almost universal in distribution over the plains (Lowie, 1924, p. 249).

Religion remained as individualistic as ever, owing to the stress on individuality in the war complex, as well as the extension of the pattern of self-sufficiency from the old foot culture. Lowie speaks of individually acquired supernatural powers for luck in war (including invulnerability to bullets), luck in gambling, and luck in hunting. Such powers came to an individual in dreams from the supernatural being who controlled the power, and this supernatural became a sort of a guardian spirit for the individual (Lowie, 1924, pp. 291–298). Steward discusses these elements of culture as being present among the Nevada Shoshone (1941, p. 264) and the Northern Shoshone and Gosiute (1943, p. 286).

With the coming of the traders into their area, the Ute found a new way to acquire material possessions. Antoine Robideau set up a trading post in the heart of the Uintah range in 1832 for the purpose of obtaining furs from the Indians. Sage, who visited it in 1841, mentioned that the Indians trapped for Robideau, trading skins for rifles, knives, gunpowder, red cloth, blankets, and vermilion. He said, "Skins are very abundant in these parts as the natives, owing to the scarcity of buffalo, subsist entirely upon small game which is found in immense quantities" (Sage, 1858, p. 232). The fort was destroyed in 1844 by the Ute because of their personal dislike of its proprietor, and for the trade goods that Robideau kept there (Reagan, 1934, p. 60). This violence against Whites is characteristic of period 3, which began 2 years later, with the coming of the Mormon settlers.

WHITE-CONTACT PERIOD

In 1847 the first wagon train of Mormon immigrants reached the Salt Lake Valley and settled down. Four years later the Government established an Indian agency to act as mediator between the Ute and the settlers. Already changes had taken place. Wilson, an Indian Service employee on his way to California, wintered at Fort Bridger in 1849, and reported the fish and game around Utah Lake had been greatly depleted by the settlers. He reported, further, that the Uintah Basin was still unaffected, because the emigrants used the famous South Pass, which was north of the Uintah Mountains. The Wasatch Mountains to the west of the Uintah Basin acted as a barrier to settlement by the Salt Lake Valley nucleus of Mormons (Wilson, 1849, p. 1004).

Stansbury, who was in Utah surveying for the U. S. Bureau of Topographical Engineers in 1852, said in his official report:

> Upon terminating the field work for the season, I dispatched three men, one of whom was my guide and interpreter, with a small invoice of goods, to trade for horses among the Uintah Utahs, with directions to await my orders at Fort Bridger. Reports afterwards reached us that a bloody fight had taken place between the Sioux and the Yampah Utahs, which latter tribe reside in the vicinity of the Uintahs. [Stansbury, 1852, p. 120.]

At this time the Yampah were evidently still going to the Plains to hunt, and had evidently incurred the enmity of Sioux who roamed central Wyoming at that time.

Brigham Young was appointed the first superintendent of the Utah Indian Agency. In his official capacity he tried to make peace between the Ute and the Wind River Shoshone in 1852 (Young, 1852, p. 437). Shortly after that, the Timpanagos under the celebrated Chief Walker, conducted a number of raids against the Mormons themselves. The direct cause for these raids, known in the literature as "Walker's War," was, according to Jones, an altercation between a Mormon and one of Walker's men. The Mormon hit the Indian with his gun for beating his squaw. The Indian was killed, and the growing bitterness of Walker against the Whites ended in an attempt to wipe them out. Just previous to this incident, Young had declared the slave trade carried on between the Ute and the Spanish in New Mexico illegal. The Spanish were forbidden to buy the Paiute children which Walker and his band bought or stole from their families, and a lucrative business stopped (Jones, 1890, p. 56). Walker and his band were camped on Utah Lake at this time, which, according to Wilson, was being settled by the Mormons.

Walker reached his position of prominence by leading raids into southern California against the Spanish settlements there. Jones speaks of one such raid in 1852 in which Walker drove off over 1,000 horses (Jones, 1890, pp. 41–42). According to Frémont, Walker's band also held up wagon trains bound for California, which, after paying a tribute in goods to Walker, were allowed to proceed safely (Frémont, 1887, vol. 1, p. 386).

Young made peace with this powerful chief in 1855 (Hurt, 1855, p. 518), and set up a series of farms the next year to teach the Indians how to make a livelihood from the soil. The Pahvant under Kanosh were settled on Corn Creek Farm in Millard County, the Sanpitch were settled on Twelve-mile Creek Farm in San Pete County, and Walker's band were settled on Spanish Fork Farm in Utah Valley (Young, 1856, p. 776). Walker died before his band left for Spanish Fork (Burton, 1862, p. 475), however, and Jones said his band split up (Jones, 1890, p. 42).

In the next few years, reports from Indian agents give a picture of what was happening to the Ute. Forney at Whiterocks in the Uintah Basin wrote in 1858 that he had had a visit from two Ute bands under Sanpitch and White Eye, and they were starving (Forney, 1858, p. 561). He further stated that the whole Utah Valley was taken up in farms with 8 towns of from 300 to 4,000 people scattered through it. The Indians that had lived in that area were settled at Spanish Fork, and Salt Creek (in San Pete County) on farms. Forney engineered new peace talks between the Wind River Shoshone and the Ute during that year (Forney, 1858, p. 565).

The next year he stated the Ute were destitute, and:

> It is my clear conviction that the immigration of a white population into this territory has had a deleterious effect on the Indian. Game cannot exist except in the fertile, watered valleys; these, with a few exceptions, are occupied by a thrifty population, and, consequently, the game is exterminated. [Forney, 1859, p. 733].

On October 3, 1861, by Executive Order of President Abraham Lincoln, the Uintah Valley Reservation was created. Consequently the Indian agents at that time endeavored to induce the Indians to move to that reservation. This became official policy on May 5, 1864, when an Act of Congress authorized the sale of all Indian reservations theretofore made in Utah except the Uintah Valley Reservation and directed that as many Indians as possible be collected and placed in Uintah Valley.

Violence broke out again, however, in 1865, which temporarily halted the process of confining Indians to reservations. Jones said the immediate cause was the whipping of one of Black Hawk's men by a white man (Jones, 1890, p. 166). A series of raids occurred immediately after that. The underlying cause was hunger, however, and possibly smallpox epidemics as suggested by Lavender (1948, p. 79).

The war threatened to become general when one of the band chiefs, Sanpitch, was arrested for supplying Black Hawk with ammunition, and was killed while trying to escape. Since Sanpitch was a relative of Tabby, who was then Uintah chief, this upset the Uintah. Short rations during a hard winter on the Uintah Valley Reservation made the situation worse. Head was then agent at Whiterocks, the agency town on this reservation. He described the state of affairs in the following words:

> The Uintahs were previously somewhat ill-disposed from the nonreception of their presents, and from the fact that almost no provisions had been furnished them during the winter. The winter was one of unusual severity, and they had nearly perished of starvation. Agent L. B. Rinney, in charge at the Unitah agency, was guilty of gross neglect of duty, and had expended the liberal appropriation made by the government in such a manner to be of almost no benefit to the Indians. The Indians were greatly exasperated against him from his having made countless promises to them which were not fulfilled. The causes above named united in producing much ill-feeling among the Indians, who prepared for a general war. Large numbers were assembled in Uintah valley. The white laborers at the Indian Farm at Whiterocks were much alarmed and left the reservation. [Head, 1866, p. 125.]

To complicate matters, Superintendent Irish had made treaties with all the Ute in 1865 to induce them to settle on the Uintah Valley Reservation, and the Senate refused to ratify the treaties. In 1867 Head warned that ratification should be accomplished immediately to keep the Ute from starting a general war. He quoted Tabby, the Uintah Chief:

> . . . should war break out between the whites and Indians, or should they be induced to join Black Hawk's band (which they have frequently been urged to do) the "Great Father" in Washington would see the folly in not keeping his word. [Rhodes, 1867, p. 181.]

Black Hawk was shot through the lungs in a raid on Round Valley and he ceased raiding from that time on (Alter, 1931, pp. 99–108). Eventually he settled down on the Uintah Reservation and turned his hand to farming (Head, 1869, p. 669).

Alter quotes Black Hawk as saying in 1870 just before he died that raiding was forced on him because of the starvation of his people. The Ute had lost their hunting and fishing grounds to the Whites, and his warriors were whipped and occasionally killed by the Whites (Alter, 1931, p. 108).

Jones, who was instrumental in eventually pacifying the Indians said that bad management in the agency was responsible for the state of starvation which the Indians found themselves in most of the time (Jones, 1890, pp. 174–175).

To the Whites, every time the Indians behaved in an unpredictable manner, it seemed as if total war was about to be thrust upon them. As a consequence, the authorities were continually reassuring the people of the peaceful intentions of the Indians to prevent panicky Whites from shooting Indians indiscriminately. The quotation is from a contemporary newspaper with the dateline June 21, 1870. It reads:

> Mr. M. J. Sheldon, Government Interpreter for Uintah, reported that the Tabbywatts, Piemps, and Yampa Utes, from the White River country, the Uinta Utes, Snakes, Bannacks, and other northern tribes of Indians were assembling in the Bannack country, fifty miles east of Bear Lake Valley, to perform their traditional religious rites. They meant peace, and when through with their rites, would disperse. [Alter, 1932, p. 391.]

THE RESERVATION PERIOD

By 1870 most of the Utah Ute were on the Uintah Valley Reservation, although they still left the reservation for their annual hunts.

Some of the Uintah at this time were seriously trying to farm. Powell visited the Whiterocks agency in 1869, and had a talk with the old chief, Sowiet, and his wife. He found Sowiet to be senile, but his wife

> . . . has much to say to me concerning the condition of the people, and seems very anxious that they should learn to cultivate the soil, own farms, and live like white men. After talking a couple of hours to these old people, I go to see the farms. . . . It will be remembered that irrigation is necessary, in this dry climate, to successful farming. Quite a number of Indians have each a patch of ground, of two or three acres, on which they are raising wheat, potatoes, turnips, pumpkins, melons, and other vegetables. . . . They are still occupying lodges, and refuse to build houses, assigning as the reason that when anyone dies in a lodge it is always abandoned, and very often burned with all the effects of the deceased and when houses have been built for them, they have been treated the same way. [Powell, 1875, p. 42.]

Sowiet's senility left the Ute without a leader of enough prestige to demand allegiance from all the bands. Head reported of this:

> The various distinct bands and tribes of Utahs are virtually without an efficient head chief whose authority would be everywhere recognized. Tabby, the principal chief of the Uintas, is not fully recognized as their chief by the small bands of Sanpitches, Yampas, Timpanogs, and others upon the Uinta reservation, and in case of the recurrence of petty stealing raids there is no recognized head chief who can be held accountable for the depredations, or whose authority to punish the offenders would be acquiesced in by all. The office of head chief is elective, all the different bands of Utahs being entitled to a vote; but no action will be had in the premises during the life of Sowiet, and the present somewhat anomalous condition of affairs will doubtless continue so long as he shall live. [Head, 1868, p. 610.]

During this year the crops suffered so much damage from grasshoppers that very little was saved for the harvest. The Ute had dropped their old habit of eating the grasshoppers, and decided that it was not very intelligent to raise food for grasshoppers to eat, since they had no value (Dodds, 1868, pp. 615–616). Therefore, the Ute backslid as farmers. In 1871, Thompson, one of Powell's crew in the exploration of the Colorado River, stopped off at Whiterocks and commented on this situation.

> I am not very impressed with the success of the attempt to civilize the Indian. The employees at the Agency plough the land, furnish seed, dig the irrigating ditches, cut the grains; in fact do all the work that requires the use of tools. The Indians irrigate a little. The bucks make the squaws do the work while they race horse or loaf around the Agency. . . . Employees all without exception, state that the Indians will steal from Mormons at every chance, especially horses and cattle. The employees do not seem to care how much stealing is done by the Indians, provided the Mormons are the sufferers. . . . Others have been known to steal and get blankets. Two or three months ago a trapper was killed by some Utes. The agent presented the meandoers with presents to teach them to do so no more. [Thompson, 1939, p. 28.]

He visited one of the Indian camps nearby, and wrote this description of it.

> Went to Lo-ki-wa-no's wickiup first. He has a lodge of canvas and a summer home of boughs. Was lying on a buffalo ribe. Squaw was smoking an elk skin. Fire in middle of wickiup. The boys sat in a ring and smoked with the host, and a visitor. He seemed to be the most industrious, best dispositioned Indian among them. Has perhaps two acres of wheat, one of potatoes, one of corn that he has done most of the work on. Has it fenced with a sort of a brush fence to keep out the goats and stock. His squaw looks old but seems to enjoy life better than most of them, that is, is not abused as much. [Thompson, 1939, p. 29.]

Critchlow reported in 1874 that the Ute under his supervision disappeared from spring to fall on their annual hunt (Critchlow, 1874, p. 584). He started a day school at Whiterocks in 1875, but was not very successful, according to his own testimony. Nevertheless, from 1875 on, some sort of school was always provided at Whiterocks for the education of Ute children. Critchlow reported in 1877 that some of the band leaders appeared dissatisfied with the Uintah Valley Reservation. Kanosh took his Pahvant back to their old haunts south of Utah Lake, and a Sanpitch band returned for a while to San Pete County (Critchlow, 1877, p. 578). Some of these drifted back to the Uintah Valley Reservation, but Steward mentions a remnant of Pahvant still to be found at Kanosh, Utah (Steward, 1938, p. 222).

The Yampa and Grand River bands were at Meeker, Colo., under a separate agency at this time. Their history was more or less parallel to the Uintah during the 30 years between 1847 and 1877, but in 1878 they unfortunately were put under the jurisdiction of an agent, N. C. Meeker, who was determined to civilize them immediately. Meeker wrote in his report for 1879, "I should like to have plenty of land in cultivation, with tools all ready; take away their horses; then give the word that if they would not work they should have no rations" (Meeker, 1879 a, p. 125). He further stated that he believed too much time was spent in gambling and horse racing, and wished to stop these pursuits. Meeker did not understand his charges. He sent an article to the American Antiquarian the same year depicting the Ute as friendly and peaceful, but lazy, and needing the stern hand of discipline to give them more industrious and orderly ways (Meeker, 1879 b, pp. 225–226).

Meeker set about his reforms by plowing up the race track for a wheat field. The Ute rose under the leadership of a war chief, Douglas, and massacred the agent and most of his agency officials. News of this electrified the Whites in this area. At the Southern Ute Agency in Colorado, Page, the agent reported:

> Three days after the massacre of Agent Meeker, at White River, about 250 miles distant by trail, six young bucks arrived here and endeavored to induce the Southern Utes to join them in a general war; scalp and war dances were held day and night, and a grand council was held at the agency, and for a time there seemed but little doubt of their success. [Page, 1880, p. 139.]

A commission from Washington came out to settle the trouble. They had the Ute living under the White River Agency jurisdiction rounded up, whereupon they made a treaty with them. The White River Indians were moved under guard soon after to the Uintah Valley Reservation where they were given land, much to the consternation of the Uintah. The Uncompahgre were removed from their reservation in Colorado, and given land just south of the Uintah Valley Reservation in 1881 by the same commission. The war scare reported by Page, combined with the fact that valuable mineral deposits had been discovered on their reservation forced the move (Ute Commission, 1881, pp. 383–390).

In 1883, Davis reported interband friction developing between the Uintah and the White River bands because the White River Indians got annuity payments as a result of the treaty following the Meeker massacre, and the Uintah got nothing because they had been peaceful. Furthermore, the Uintah had not been compensated for the lands taken away from them and given to the White River for settlement (Davis, 1883, p. 198).

This sort of interband friction and rivalry was not so much the result of old hatreds as it was of new frustrations. They were raising one-third of their subsistence by farming at that time, obtaining one-third through hunting and fur trapping, and receiving one-third from the Government in the form of rations (Davis, 1884, p. 200). None of these sources of supply were secure. Hordes of grasshoppers often destroyed the crops, game was scarce, and at that time Government rations were even more scarce. Thus the Ute became acquainted anew with economic insecurity. The old insecurity of living in an inhospitable environment had been solved by the development of the communal horse band. Having known security, they felt more bitter about losing it than they would have if they never had known it. The interband rivalry already reported in 1883 shows that the Ute had learned that aggression toward Whites was best repressed. The agency officials could and did withhold rations from noncooperative Indians, and the Indians had become dependent on those rations. Therefore, the aggression was turned inward upon members of the group who, though Indians, belonged to different bands.

It is probable that there was an increase of fear and suspicion of witchcraft at this time. Lowie mentions the practice of killing shamans suspected of witchcraft (Lowie, 1924, p. 191). Hamblin said in 1862 that "This very prevalent idea of good and bad medicine, among the Indians, gives evidence of a very general belief in witchcraft" (Hamblin, 1881, p. 64). Gottfredson (1919, p. 231) adds that "They [the Ute] are very much afraid of witches and crazy people." These references all refer to this general time in history (1860–80) and show that there was in the culture an institution by which personal frustrations could be resolved. Critchlow mentioned an increase in sickness among his wards in 1881 (Critchlow, 1881, p. 215). Because sickness was believed caused by witches, it is evident that with more sickness, there would be a general belief in an increase in witchcraft, and a suspicion of shamans and deviants as being responsible for the state of affairs.

In my researches among the Ute, I found a widespread fear of witchcraft. One informant told me that I was foolish to eat with people to whom I was not related. He said that the danger of being poisoned by evil-minded people was enough to make any Ute extremely cautious. When fear of witchcraft reaches the proportions it has on the Ute Reservation, it becomes obvious that frustrations inherent in the cultural situation have found an outlet in aggression toward neighbors.

The Ute, in 1886, still retained many of the outward appearances of being Indians culturally. They were described by White—

> . . . blankets, leggins, moccasins, gee-strings, paint and feathers constitute the fashionable or prevalent Ute costume, and the brush wickiup or the cloth or skin tepee is the almost universal Ute habitation. [White, 1886, p. 444.]

In this year Fort Duchesne was built to police and protect the Indians on the reservation. Negro soldiers were stationed at Duchesne, and some racial intermixture took place between the Ute and the Negroes (Gilbertson, 1913, p. 363). My informants told me that the Indians had hated the Negroes, however, and were very bitter about their presence at the fort.

The Indians themselves still spent most of their free time with their gambling, however, and showed little interest in settling down and becoming farmers. In 1888, Agent Byrnes tried to curb this practice again. He reported:

> There has not been as much gambling during the past year as heretofore, as I have entirely broken up all gambling at, around, or about the agency, and the police force (Indian) are under instructions to break it up wherever it is practiced. [Byrnes, 1888, p. 220.]

The Ghost Dance of 1890 seemed to have affected the Ute but little. Mooney reported the Ute were present at Wovoka's second dance in 1889 at Pyramid Lake (Mooney, 1896, p. 802). If they tried a Ghost Dance on their own reservation, there is no record of it. One of the objects of the dance was to bring back all the dead. Fear of the dead evidenced by Ute burial practices shows that this would be inconsistent with their desires. The year 1890, is the one quoted by Lowie (1919, p. 405), Spier (1921, p. 495), and Shimkin (1953, p. 472) as the date of the actual introduction of the Sun Dance to the Ute, however. This is more fully discussed on pages 239–241, but it may be suggested here that the Sun Dance was for the Ute at this time what the Ghost Dance was for the Plains Indians.

The first Christian missionaries to come to the Ute appeared in 1897. A this time the Episcopal Mission was established at Whiterocks (Randlett, 1897, p. 286). A mission is still maintained by this sect there, and probably gave to these people the first Christian doctrine outside of Mormonism. Shimkin (1953) believes, however, that Wind River Shoshone missionaries proselyted among the Ute as early as 1890.

In 1886 the General Allotment Act was passed specifying that all Indian reservations were to be broken up, with 160 acres to be allotted each family head, and 80 acres to be allotted each single person over 18. Conditions on the Uintah and Ouray Reservation were not ready for the dismemberment called for by the law. Congress finally took notice of this situation, and on May 27, 1902, another Act of Congress authorized an allotment of 80 acres of irrigable, agricultural land for each head of a family, and 40 acres of such land to each other member of the Ute tribe then residing at the reservation. By Acts of Congress on June 19, 1902, March 3, 1903, and March 3, 1905, about 250,000 acres of nonirrigable land were set aside as a grazing reserve, to be kept intact as tribal land (Taylor, 1931, pp. 29–32).

By June, 1905, the allotment of land to individual Indians was completed, and unallotted land was opened to sale to Whites by lottery (Leupp, 1905, p. 145). In protest against this invasion of what the Ute considered their domain, 600 of them took their cattle and belongings and left the reservation. They were rounded up in Wyoming and settled in South Dakota on the Pine Ridge Sioux Reservation. The Sioux did not want them, so when the Ute had killed and eaten all their livestock, they asked to be taken back to their own reservation. The Whites who moved onto the reservation were generally dissatisfied with the land their lotteries gave them, and many of them moved away after a few years. Without irrigation, land in this area is worthless for agricultural purposes because of scanty and uncertain rainfall.

The Indians' lands were put in shape for farming starting in 1906. Wright summed it up:

> Since the Uintah Basin is an arid country, the Government passed an Act in 1906 authorizing the construction of the Uintah Indian Irrigation Project. Out of the proceeds of the land sales, and the homesteads, there was appropriated $600,000 to build the project. Various appropriations were added from time to time until now the total has run into many millions of dollars. This project covers approximately 80,000 acres and contains 22 canal systems, which divert water from all the streams. No storage facilities were created, just diversions. A land-subjugation program was initiated by the Government to level and clear, plow and fence the Indian allotments. For that purpose tribal funds were used. Some of the allotments at the present time have as much as twelve to sixteen hundred dollars debt against them for the subjugation work done to get these lands into cultivation. [Wright, 1948, p. 335.]

Lowie visited the Ute briefly in 1912. He was unable to establish rapport with the Ute at Whiterocks, and was forced to use Southern Ute informants at Ignacio, Colo., for most of his data. He reported:

> Shoshoneans in general are extremely reticent about divulging ethnographic information, and in the case of the Northern Ute this sentiment is intensified by a feeling of hostility against whites generally. [Lowie, 1924, p. 191.]

He was asked to pay what he considered exorbitant fees for both interpreters and informants at the Uintah Reservation which shows the Indians had become aware of the cash econony of White culture at that time.

Densmore visited the Northern Ute to make a study of their music in 1916. Her only observation of interest here was that despite a proclamation by the agency outlawing the Sun Dance, it was held as usual (Densmore, 1922, p. 79). At this time Government policy attempted to discourage elements of native culture. The intent was to civilize or acculturate Indians as rapidly as possible, and elements of native culture which harkened back to old ways of doing things were erased when possible.

The same year, according to La Barre, peyotism was introduced.

> A Sioux introduced peyote to the Uintah and Ouray Agency. The Ute around Fort Duchesne have used peyote "on the sly" since before 1916; the cult was vigorous around Randlette, Utah, by the spring of 1916. [La Barre, 1938, p. 120.]

Several of my informants told me that the agent at that time made every effort to stamp out peyotism. Supplies of peyote were confiscated and destroyed when they were located, and meetings were broken up with fines for the participants. Nevertheless, most of the old fullbloods joined the movement, and it became fully embedded in the culture. Its Christian symbolism was progapanda for White acceptance, but in effect it has not worked out that way. It is one of the few attempts to achieve a group solidarity as Indians that has come from within the culture, after its introduction. Unfortunately in accomplishing this, the Ute have given the neighboring Whites another characterization to add to the stereotype of lazy, dirty, drunken Indian that has grown out of the contact situation. Taking of peyote has become limited almost entirely to old fullbloods among the Ute, and young fullbloods who identify themselves with Indian culture. As such, peyotists have become a factional group, with the generally better educated mixbloods forming a pro-White faction against them.

Steward visited the Ute in the early thirties. He observed both the Bear Dance and the Sun Dance. Of the Sun Dance, he said that it had become so commercialized as to be meaningless to the Ute themselves (Steward, personal communication). The Bear Dance, however, retained some of its old form, although its function had presumably changed partly owing to "restrictions imposed upon the dance by the Indian administration" (Steward, 1932, p. 263). His opinion was that the Ute were in a state of extreme deculturation, having lost much of their old culture, without much success at substituting elements of White culture in its stead.

In 1934, when the Wheeler-Howard Act was passed offering to Indians a method of achieving a measure of self-government, the Ute considered adopting the Charter and Constitution drawn up for them by the Indian office to take advantage of this opportunity. Foremost in this action was a group of young mixbloods who saw in it a chance to take the tribal government into their own hands. When Kroeber visited the Ute Reservation in 1900 on a collecting trip for the American Museum of Natural History, he saw almost no mixblood Indians there. These mixbloods were born after the influx of Whites into the reservation in 1905, when many of the White settlers took Indian wives. Their efforts to achieve ratification of the measure were successful in 1937, and period 4 of Ute history began.

THE REORGANIZATION PERIOD

The ratification of the Constitution and the Charter was neatly engineered by the Indian Agency at Fort Duchesne. By 1936 the agency knew who was in favor of the reorganization, and who was not. Therefore, the ratification vote on the Constitution was held on December 19, 1936. In mid-December in this section of Utah, most of the roads are blocked by deep snow, and many of the Ute were kept from the polls. My informants told me that agency trucks rounded up those who were favorable to the reorganization, but the fullbloods, who live in the foothills in the winter were not well represented. It passed by a vote of 347 for and 12 against.

The Constitution has the same powers embodied in it that the Charter has, and some tribes adopt only one or the other. It is interesting, however, that the vote on the Charter was held on July 6, 1938, and it was accepted by a vote of 213 for to 8 against. During July in Utah excellent weather prevails, and the fullbloods were clustered in their summer quarters around the small towns where the polls were held. Nevertheless, in spite of a larger potential vote, the actual vote fell off by about two-fifths.

Elections were held in January of 1937 for members of the Tribal Business Committee. Again, the fullbloods were out in the foothills, and a slate of mixbloods took office as a result. By July of 1938, many of the people were already disillusioned about the reorganization, and even some of those who had voted for the Constitution refused to vote for the Charter. The Ute have trouble organizing themselves under a leader. As individuals they behave as independent units, and few leaders can command over a few handfuls of followers. Therefore, when they disapprove of something, they behave in a negativistic manner. They become sullen and noncooperative, and ignore the efforts of the White administrators to enlist their cooperation. This accounts for the light vote on the ratification of the Charter, and also explains why disapproval was not actively voiced at the polls.

One of the members of the Tribal Business Committee informed me that it has become necessary to ask for nominations for the Committee repeatedly before there is any reaction. What happens, is that all of the old chiefs who are descendants of the pre-reservation band chiefs, are nominated, and the fullblood vote is split, allowing the few mixblood candidates to ride into office.

The first change in the culture to be brought about by the reorganization was the replacement of the old chiefs by the Tribal Business Committee. By 1937 chieftainship tended to be hereditary. Sons of men who had led horse bands took over their fathers' positions at their deaths. Their authority had deteriorated to the point of being spokesmen for their band members when the agent requested such a spokesman.

Therefore when decisions for the tribe were made by a group whom the people considered outsiders, a feeling grew among the Ute that a betrayal had occurred. The mixbloods had represented themselves, truthfully, as being better able to cope with Government red tape than the non-English speaking, fullblood tribe members. They were not, however, the mere spokesmen for the people that the old chiefs had been. My informants told me that most tribal business is carried on without the knowledge, and sometimes without the approval of the people.

The issue between the mixbloods and the fullbloods that has resulted in a growing and increasingly bitter factionalism is merely one of orientation. The names "breed" and "fullblood," are used by the Indians themselves to distinguish those who, regardless of the biological definition, are oriented toward Indian or White culture. Some individuals who are part White identify with their fullblood Indian friends, and are accepted without prejudice. Having one English-speaking parent who, being a member of the dominant culture is usually dominant in the home, has a certain advantage for mixblood Indians. They pattern themselves after the White parent and accept the standards of White culture as their own. They usually get more education and end up with more economic security than the fullblood tribe members.

The personal philosophy of Collier, the administrator who pushed the passage of the Wheeler-Howard Act, has resulted in other changes on the tribal level. Collier (1947, pp. 154–155) listed seven principles in his book, Indians of the Americas, which guided him in his office of Indian Commissioner.

> 1. Indian societies should be continued in their native state, regenerated, or recreated.
> 2. Indian societies, whether ancient, regenerated or created anew should be given status, responsibility and power.
> 3. Each and all freedoms should be extended to Indians, including guarantee of the right to organize, proclamation and enforcement of cultural liberty, religious liberty, and unimpeded relationships of the generations.
> 4. The land should be held, used and cherished in the way the particular Indian group desires.
> 5. Freedom should include positive things like guided organization, extension of credit to be managed co-operatively, education, conservation of natural resources and acceptance of tribal responsibility.
> 6. Indians must be given the experience of responsible democracy.
> 7. Integrated research by specialists on the tribal level to solve the social and economic problems of Indians is imperative to the success of the program.

These principles seem very clear when considered separately but they contain certain inconsistencies. The first two principles voice the assumption that the deculturation process can and should be stopped and even reversed. If this were carried to its logical conclusion, we might expect the reoccurrence of war parties raiding each other on the Plains, or a return to seed gathering as the subsistence economy in the Basin. Practically, it means that the forces for conservatism among Indians would be sponsored in their fight against modern medicine, education, and scientific agriculture. This has actually happened to some extent, but principle No. 5 has tended to offset the effects.

The phrase "enforcement of cultural liberty," in principle No. 3 is particularly unfortunate. Factionalism occurs in most Indian groups today. The Indian Office has taken sides from time to time, a practice that has caused the factionalism to become more bitter. Principle No. 4 has been interpreted in the light of attitudes current among Indians in the Southwestern Pueblos. Communal ownership of the land is supposed by the Indian Office to be the universal Indian usage, and this has been put into effect where possible. Principle No. 6 is in direct opposition to Nos. 1 and 2. Democracy is a particular method of political organization that has grown out of Western European history, and is foreign to most Indian cultures. The need for research emphasized in principle No. 7 has been used to put across the six other principles, and has been directed toward that goal. Directed culture change is certainly an end to be aimed for, but when we know as little about the mechanics of culture change as we do now, the success of such an attempt will be questionable.

The effects of the reorganization on Ute culture were manifold. Peyotism had been suppressed as destructive to the property, and health, of those who partook in the ceremony until 1937. The Indian Office recognized it as a true, Indian religion in spite of its recent introduction, and peyotism was legalized and protected. Today on the Uintah and Ouray Reservation, peyote is taken by most of the fullblood Ute in weekly ceremonies. It has become a year-round integrating factor for those who identify themselves with Indian culture, and according to administrative officials is the biggest stumbling block to a real integration of the whole people that exists today. Very bitter factionalism has grown up, particularly in the last few years, between those who profess to follow this true, Indian religion, and those who see it as a practice which degrades all Indians in the eyes of the surrounding Whites. This split is particularly serious in view of the fact that the ruling faction, the mixbloods who do not generally become peyotes, do not recognize the cause behind peyotism. If the need for security were not so great among non-English-speaking fullbloods, it would not be sought in this typically negativistic fashion.

Communal ownership of land has been pushed by the Indian Administration. It has become policy to return land individually held to the tribe. The reason advanced for this is that some land is so tied up in heirship that it cannot be conveniently worked. Land was not allotted on the Ute Reservation until 1905, and some allotments are owned by the original allottees. A lawyer who represents individual Nez Perce told me that probating of wills by the Indian Office is so slow and so badly done that it is impossible to unsnarl the tangle before the statute of limitations runs out. This means that the complicated fragmenting process must be undertaken in spite of the will, and a new parcel of land becomes difficult to work because of the number of heirs claiming it. My informants told me that this was the case among the Ute also.

Land is returned to tribal ownership in two ways. The Annual Report of the Uintah and Ouray Tribal Business Committee for May 31, 1948 (p. 2), shows both of these processes being employed:

> The Tribal Land Division has purchased 38 tracts of land from individual Indians for a total of 2,820.04 acres. Of this amount, 2,220.04 acres were purchased with tribal funds at an expenditure of $23,418.98 plus settlement of old tribal reimbursable indebtedness in the amount of $1,364.70. From Indian Reorganization Act Funds, 8 tracts of land totaling 600 acres have been purchased at a cost of $8,327.60. In addition to this acreage two tracts of land have been conveyed to the tribe in settlement of reimbursable indebtedness, with no cash involved. The acreage totaled 80 acres and the reimbursable indebtedness settled was in the amount of $1,047.03. In addition to that amount of reimbursable indebtedness settled through land sale money, more than $3,000.00 in cash has been collected from the heirs on their own reimbursable indebtedness in addition to that allowed them in settlement of old debts by the conveyance of land.

The indebtedness mentioned has come from the workings of the Uintah Indian Irrigation Project. Wright (1948, p. 335) described it as a land-subjugation program initiated by the Government to level, clear, plow, and fence the Indian allotments. Among other things, 22 canal systems were built to supply water for irrigation. Tribal funds were used, and the cost was charged against the individual allotments, amounting to as much as from 12 to 16 hundred dollars. Annual charges for water have been leveled against these allotments whether water has been used or not. My informants told me that pressure is put on individuals to sell their land to the tribe to wipe out the indebtedness that has been built up through the years. Land that has outstanding debts against it cannot be worked by the owner. I was informed of one case where a crop was confiscated and sold to cover the debts of one man who planted his crops in disregard of the agency order. This matter was discussed at the Uintah and Ouray General Council Meeting, May 31, 1949 (p. 8 of the minutes). One Indian complained:

> It seems to me that if we are going to have to pay the price of water that we pay today it will not be very long until we will be unable to put in our crops. Last year I paid $57.00 and this year $70.00. . . . After paying for water, we are unable to buy seed to plant. I am pleading for my people. This water charge should be cut down. Farmers can't go out to earn money for water and still buy seed. I guess children will have to eat water this winter.

Figures for actual land ownership do not appear in any of the ordinary sources. Dale quotes a statement from the Superintendent of the Uintah and Ouray Agency given him on January 10, 1947.

> In 1947 they numbered 1,472 people, owning 53,334 acres of trust-allotted irrigable lands upon which they had first water rights, together with 511,160 acres of tribal grazing lands. . . . Most of the irrigable land is leased to whites, although in 1946 the Indians farmed about 4,000 acres. They owned at that time about 5,000 cattle and 7,000 sheep which were cared for under three livestock associations. [Dale, 1947, p. 250.]

The smallest farms in this area are 40-acre plots, and most farms comprise 80 acres. If only 4,000 acres were being cultivated in 1946, there were between 50 and 100 families actually living on farms. This would take care of 400 people at most. What did the other thousand do? The cattle and sheep mentioned were handled by cooperatives, which means that a few riders were hired to look after the herds, and the marketing, etc., was handled by the agency. The people had very little to do with stock. The communally held lands are used for grazing purposes by the cattle associations, although of recent years the tribe has begun to buy up farm land which has been assigned for irrigation farming purposes to Indians.

The general attitude of the Ute toward this collectivist trend is that it is contrary to every native value they still possess. In the aboriginal state, the Utes were individualists. Even in the days of communal hunting, band allegiance was voluntary. The personal attraction of an individual, and the regard and respect in which he was held by a number of people was the foundation of the band. Individual families traveled and hunted with those congenial to them. Communal ownership of material goods did not exist. Ownership of land was a concept that was very hazy, since bands trespassed onto each other's territory more or less at will. None of their experiences during the White-contact period tended to promote a feeling of communal interest. The Ute today are as individualistic as ever, and only the insecurities they suffer in common seem to be bringing them to common action.

The Indian Administration has encouraged the manufacture of native arts and crafts in an attempt to regenerate old culture values. Among the Ute an Arts and Crafts Guild was set up by a special Government employee from Washington. Articles of beaded buckskin were the sole produce of the Guild. Money for supplies to start the project was loaned by the Tribal Business Committee. Unfortunately there seems to be no outlet for the manufactured articles. The prices charged are very high in comparison to comparable merchandise obtainable in the nearby towns. This is typical of the Indian Office's effort to create a specialized Indian business style without training the people who must run it, in modern merchandising, advertising, bookkeeping, and the other principles of modern business. The project seems to be failing.

Education has been stressed by the Indian Administration, and yet facilities for education have been curtailed on the reservation. This is due principally to budget slashes by Congress, but an eighth-grade education is all that has ever been available for most Ute. One tribal official told me that the young mixbloods who spoke English in the home were sometimes sent to Sherman, in Riverside, Calif., for high school. A few have gone on to college and are leaders today, but there are still a number of children on the reservation who never attend school at all, and grow up speaking only their native tongue.

In 1939, a modern 30-bed hospital complete with surgery and dispensary was built by the U. S. Public Works Administration at Fort Duchesne, the present agency headquarters. The head resident nurse informed me that a resident physician had never been employed, and most cases had to be sent out for care in one of the neighboring towns, with individual families responsible for their own medical bills. She said that tuberculosis took a frightful toll every year, and only a few cases ever received treatment.

To supply the lack in modern medical facilities, the Ute today have been forced to turn to peyote and prayer, or rely on the shaman. Some cures are achieved in the Sun Dance by individuals who dance for that express purpose. Modern shamanism is still a very strong force on the reservation. Most shamans are believed to inherit power from dead relatives who were shamans. Either men or women may possess these powers, and there seems to be no preference for either sex in terms of popularity as doctors.

Informants say shamans may have weather-control powers and divining powers as well as curing powers. All such power to control supernatural forces comes in dreams, or in an unconscious state occurring occasionally in the Sun Dance when a dancer faints from hunger and exertion. Curing is accomplished through songs, manipulation, sleight-of-hand, and sucking. Sickness is believed to be a result of object intrusion, and comes from evil-minded people who practice witchcraft. Shamans themselves are often under suspicion for witchcraft, especially when they have lived a long time.

Shamanism and peyotism would both eventually lose their curing functions if it were possible to obtain adequate modern medical treatment. As long as the old people live and continue to influence the younger people, however, it is probable that it would be very difficult to introduce modern medical practice. There is a question, too, of how much sickness with a psychosomatic origin would continue to respond to native treatment, but possibly good results from native treatment would be common. Anyway, as conditions stand today, both shamanism and peyotism are forces for conservatism, as well as institutions to handle sickness. It is predictable that these elements will be retained with their present functions in this culture for some time.

In no respect may the Ute be said to have benefited from the reorganization. Most of them still live in one-room, dirt-floor cabins in the winter, and tents in the summer. The men wear blue jeans and big cowboy hats, and the women wear cheap calico dresses and shawls. Both men and women spend their free time on the gambling grounds, instead of in the fields, and consequently live on a diet of garden vegetables and wild fish and game in summer, and go hungry in winter. The average family is in debt to the trader at the general store. The future of the children appears to be limited to this sort of life at the present time.

SUMMARY

The five historic periods discussed under Cultural Background are summarized here, with emphasis on the culture changes which occurred in each period.

The pre-horse period was characterized by a subsistence economy which was based primarily on gathering. Hunting was an individual undertaking rather than a communal one, and large game animals had to be eaten where they were killed since no adequate method of transporting the carcass of a bison or an elk, or a bear, existed at that time. Basketry, the wickiup, the bow and arrow, the net, and the rabbit-fur cloak were material culture elements in the Ute pre-horse culture.

The primary social group was the biological family unit. Larger groupings occurred in the fall when wild seeds could be harvested, and in winter when family groups lived near these caches of food. Spring and summer found the family groups scattered over a wide expanse of territory, since the inhospitable environment could not support large groups with the technological equipment for exploiting the natural surroundings possessed by the Ute at that time.

Ceremonial life was restricted to the Bear Dance, held in the spring just before the temporary winter villages broke up, and certain social dances such as the Round Dance, which were held whenever conditions permitted. Crisis rites were emphasized. For women the onset of menstruation was marked in a ceremonial fashion. There were restrictions on both the mother and the father when a child was born. Burial practices were designed to carry the family through the period of readjustment that the removal of a member would entail.

The principal religious figure in pre-horse culture was the shaman.

Through supernatural powers he controlled, the shaman was able to cure the sick, discover witches, control the weather, and predict the future. The shaman was a specialist in the sense that he filled a special role in the culture, but there probably was not enough demand for his services for him to procure a living thereby.

The post-horse, pre-White-contact period was marked especially by changes in the subsistence economy, and in social organization. The acquisition of the horse allowed new and more efficient methods of hunting to be practiced. Hunting communally, a number of mounted men were able to surround, kill and transport back to a central location small herds of large game animals. Out of communal hunting practices grew bilateral bands, somewhat nebulous in character at first, but eventually crystallizing. They were composed of unrelated families and were not landowning, but they were named, and had a political unity, strengthened by need for protection in warfare.

As the new methods of hunting reduced the game herds, competition for hunting grounds grew. Horses were needed to exploit what hunting there was, and horses came to be regarded as wealth. Eventually the Ute were forced to seek the bison herds in the Plains to the east of the Rockies, where they came into unfriendly contact with Plains tribes. They were raided both for their horses and for trespassing by Arapaho, Cheyenne, Sioux, and Wind River Shoshone, and the Ute learned the Plains war patterns in this fashion.

Leadership qualities in men came to be recognized, both for civil and war activities, and individual leaders became known outside of the small band. Occasionally small bands associated themselves together under the leadership of one of these widely recognized men for purposes of raiding or defense. Hatch mentions the Uintah being organized into four subbands all under allegiance to one man (Hatch, 1862, p. 204).

Religion met a new need during this period. The growing importance of warfare gave an impetus to seeking individual powers for warfare. Guardian spirits gave individuals protection against enemy bullets, as well as luck in hunting, gambling, and love. Supernatural powers came in dreams, and such dreams were often sought by sleeping in places inhabited by the spirits controlling the powers. Shamanism continued to be important in combating sickness, and wounds received in battle were treated by shamanistic individuals.

Period 3, the White-contact period, was foreshadowed by the influx of fur traders in the 1830's. The Indians received rifles about this time and met the incoming Mormon settlers in 1847 on equal terms. The settlers took over the fertile, watered valleys for their farms and consequently reduced the number of food animals and plants upon which the Ute had subsisted. Some of the bands turned to raiding the settlements as a substitute for hunting, and between 1850 and 1870 occasional trouble broke out between the two peoples. By 1870, however, the Ute had become dependent on Government rations for a large part of their subsistence and were kept in check fairly well by the threat of withdrawal of this support, and period 4, the reservation period, began.

By 1880 almost all of the Ute north of the Colorado River were on the present Uintah and Ouray Reservation. They turned to farming in an unenthusiastic way to make up the difference between the amount of Government rations issued and the amount of food needed to stay alive. In this period consolidation of the various bands of Northern Ute into three large bands was accomplished. The present Uintah, White River, and Uncompahgre bands are a result of this consolidation. Leadership degenerated to the point where a leader was a spokesman and nothing more.

In 1897 the first Christian mission was established among the Ute at Whiterocks. This mission remained, and today it is still the only Christian mission among the Ute. The Indians had long been familiar with some of the tenets of Mormonism, but drew a careful distinction between it and Christianity. Only a few mixblood Indians who were born into Mormon families have embraced that doctrine, owing to the long history of mutual dislike in which the Ute and the Mormons have held each other.

Peyotism was introduced about 1916 by a Sioux medicine man. This religion was underground until 1937 when it was legalized and protected, but informants say that 20 years previous to this most of the fullbloods were members of peyote groups.

The reorganization period started in 1937 after the ratification of the Ute Constitution, and the subsequent election of the Tribal Business Committee. Since its inception, the Tribal Business Committee has been controlled by the mixblood faction on the reservation, and has become more and more unpopular with the fullblood majority in the tribe. For the first time in the history of the tribe, the political power was placed in the hands of a group who were activated by a desire to conform to White culture standards.

A marked increase of economic insecurity was induced by policies directed by the Indian Office, and administered by the minority group in power. An attempt to collectivize land holdings has been partially successful, and has led each land owner to fear a forced land sale to settle old debts against his land. It has been increasingly difficult for families to get through the winter, because the food surpluses are harder to come by each year. There is no market for

Indian labor off the reservation, and no effort has been made to create such a market.

Religion has become a rallying point for the Ute during this period. Peyotism functions as a year-round integrating factor for fullbloods, and is the principal mechanism to combat disease on the reservation. The Sun Dance has become a political integrator, and is the dramatic symbol of the native culture around which a revivalistic movement is growing.

THE SUN DANCE

INTRODUCTION AND HISTORY OF THE SUN DANCE IN UTE CULTURE

The Sun Dance is generally believed to have been introduced to the Ute about 1890 by the Wind River Shoshone. The following reevaluation of the data is offered as being more complete than existing reconstructions, and better fitting the sequence of historical events which led to its introduction.

In 1868 a small party of Ute surprised a war party of Kiowa and Comanche, and in the ensuing skirmish captured two Sun Dance dolls which the Kiowa were using as war medicine. Mooney gives an account of this meeting, but neither identifies the Ute involved nor gives a consistent account of the ultimate disposal of the dolls. He states, however, that the Kiowa never got them back (Mooney, 1898, pp. 322–325).

At this time the agent for the Uintah Valley Reservation at Whiterocks, Utah, warned the Commission of Indian Affairs that the Ute were preparing for a general war. Large numbers of Indians were gathered in the area (Rhodes, 1867, p. 181). A contemporary newspaper ran an announcement in 1870 by the Government interpreter for the Uintah that various bands of Northern Ute, Northern Shoshone, and Bannock were assembling 50 miles to the west of Bear Lake Valley to hold "traditionary religious rites" (Alter, 1932, p. 391). There is no real evidence that any religious rites had ever been held by any such assemblage previous to this time.

The following hitherto unpublished letter was the source of the newspaper account.

> Heber City, Wasach Co. U. T.
> May ? A. D. 1870
>
> Col. J. E. Tourtellotte, Supt. Ind. Affrs. for Utah
> Salt Lake City
>
> Sir,
>
> I arrived here yesterday evening. This morning I started on my journey—Three miles from this place I came upon Tabby's and Tokona's lodges, consisting of thirty-five indians. I asked them when they intended returning to the Reservation. They informed me that it was impossible for them to go at present on account of the high waters. Tokona introduced me to three strange indians who he said live in the vicinity of Fort Bridger. They

> have come to these indians with word for all the indians to meet as soon as possible in the Bannock Country. An expressman left last night to carry word to all the indians south. They say that word is being carried to all the indians, east, south west and north to not fail to come as they intend to reserect their forefathers and all indians who wish to see them must be there. I have spent the forenoon endeavoring to dissuade them from going but they say the White man has nothing to do with this, it is the command of the Indian God and if they do not go they will sicken and die. Deeming it my duty to inform you of this movement I have returned to this place in order to do so. The place selected for the grand meeting is in the vicinity of Wind River—northwest of Washake's Reservation.
>
> . . . I suppose my expenses here will be about $5.00 having been detained unavoidably as Tabby wished I should write to you. He says they have no evil intentions but religious ceremonies.
>
> Yr. Obdt. Srvt.
>
> M. J. Shelton [1]

It would appear, of a certainty, that the 1870 Ghost Dance was known to the Ute, and perhaps participated in by them, although the Ute have a real fear of the dead, and the idea of resurrecting their ancestors would ordinarily not hold much appeal for them. At least they were amenable to new ideas insofar as group action for a religious purpose was concerned, particularly one hostile to the Whites. Furthermore, the Ghost Dance of 1870 was spreading at that time from the Northern Paiute around Pyramid Lake to the California and Oregon tribes.

At this time in California and Oregon, the native cultures of that region were undergoing a period of stress. Indian life was undergoing progressive disintegration owing to pressures from Whites and the resultant disruption of their aboriginal economic patterns. The influx of miners into California during the Gold Rush of 1849 and of the settlers who followed shortly after was the most important cause of cultural disintegration in that area (Du Bois, 1939, pp. 1–7). Comparable to this was the settling of the Mormons in Utah in 1847. By 1860 the Mormons had expanded from their original settlement through most of the fertile valleys in western Utah. The Ute had been displaced in the same fashion that the California tribes had been, and were suffering from the same sort of economic insecurity, brought about by the rupture of their aboriginal economic patterns.

It is possible that a Sun Dance was held at the 1870 meeting for the effect it would have on the assembled Indians. The Shoshone were familiar with the dance. According to Shimkin (1953) they had held annual Sun Dances since 1800. The Ute had just captured the Kiowa Sun Dance dolls from a Kiowa war party, and may have wanted to utilize their new possession. The Sun Dance itself was a dramatic affair, well fashioned to whip up war hysteria. This is the sheerest speculation, however.

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[1] Manuscript in U. S. National Archives, Washington, D. C.

One example of the Sun Dance being used in this way, is the following: In 1870, the Comanche, a Shoshone-speaking Plains tribe, attended the annual Sun Dance of the Kiowa. With the Kiowa and the Cheyenne, they discussed the possibility of holding an all-out war against the Whites. Richardson said of this meeting, " . . . the ceremony of the Sun Dance had come to have a social and political significance to every tribe in the Southern Plains" (Richardson, 1933, pp. 336–337). Three years later, in 1873, the Comanche decided to hold a tribal medicine dance similar to that which they had witnessed among the Kiowa. The dance was for "war medicine" and was followed by an unsuccessful raid against the Whites in southern Texas (Richardson, 1933, p. 372).

The question is raised, however, why did not the Ute utilize the Round Dance or the Bear Dance which were ceremonies well integrated in the culture around which to rally against white pressures? The Ute associated both the Bear Dance and the Round Dance with a good time. They were primarily social affairs, and attitudes the Ute held toward them did not correspond with the state of mind of the Utes in 1870. As Shimkin pointed out:

> In the crisis of 1890, tribes with well-integrated Sun Dances such as the Arapaho, Cheyenne, and Dakota seized upon an alien rite, the Ghost Dance of the much-despised Paiute, as the agency for crystallizing their anxieties. . . . In all cases, there appears to be a correlation between the prior close functional integration of a ceremony and its psychological rejection at a time of overwhelming crisis [Shimkin, 1953, p. 435].

In 1881, Clark camped with some White River and Uintah on the Reservation, however, and at that time, he said, they had no Sun Dance (Clark, 1885, p. 388). Clark was familiar with the Sioux Sun Dance and expected it to be held as an annual ceremony if it were present. He describes the Bear Dance as such a ceremony. The Sun Dance was not held as an annual ceremony, therefore, until 1890, at which time Lowie (1919, p. 405), Spier (1921, p. 495), and Shimkin (1953, p. 472) state that it was introduced; so if the Ute took part in an 1870 Sun Dance, they did not incorporate it into their culture as an annual affair until 20 years later.

Shimkin stated—

> Between 1880 and 1905 the Wind River Shoshone Sun Dance went through a period of profound change probably induced by the insecurity of early reservation life . . . (this) new form spread rapidly into the Basin, being adopted by the Bannock and Ute about 1890.

In 1890, another Ghost Dance came out of Northern Paiute country, this time sweeping through the Plains. Mooney stated that the Northern Ute sent delegates to Wovoka soon after the first Ghost Dance in January, 1889, and were present at the second one held soon after (Mooney, 1896, p. 802). There is no evidence that the Ute spectators at Wovoka's second dance in 1889 were able to introduce it to their own people on their return to their own reservation. Perhaps the Ute recalled the failure of the 1870 Ghost Dance they seem to have taken part in or at least witnessed. Furthermore the Ute were no longer ready to join in a general war for the extermination of the Whites. Cultural disintegration had gone too far. A concern for health had become uppermost in the minds of the Ute by 1890. The Sun Dance was introduced to the Ute from the Wind River Shoshone in this new cultural setting. The needs of the culture had changed, and the new ceremony was one which fitted a new need in the culture. Although the Ute participated in the new Sun Dance under the leadership of a shaman, the medical practitioner of the aboriginal culture, such participation was on an individual basis, and was motivated by the hope of a personally obtained cure for a personal malady. From 1890 on, the Sun Dance became an annual ceremony, like the Bear Dance.

An incident occurred in 1895 that put a new value into the dance. My informants told me that during the sham battle which preceded the Sun Dance as a regular part of the ritual, a man belonging to the White River band was accidentally shot and killed by an Uncompahgre. The Uncompahgre rode to the nearby Indian Agency headquarters at Whiterocks and asked for protection. Agency officials there stood guard over him to prevent relatives of the dead man from seeking revenge. Word was sent to the chief agent of the reservation, James Randlett, at Fort Duchesne, to send troops to guard against possible rioting. Randlett himself rode up to the scene of the trouble and conducted the Indian to jail, with a guard of 16 Negro troopers. The Sun Dance was not held that year. At this site, the Sun Dance had been held since its reintroduction by the Wind River Shoshone about 1890.

The next year fearing that agency officials would forbid the holding of the Sun Dance, the Ute moved the dance site to the flats near the Farm Creek Mountains by Snake John Spring (sometimes called John Reid Spring). They held the Sun Dance at this site in 1896, 1897, and 1898. In 1899, they brought the dance back to the area halfway between the present town of Neola, and the old Whiterocks Agency. Here it was that Kroeber saw the two lodges standing, and where the Sun Dance has been held yearly ever since. This site is approximately 5 miles west of the old dance grounds where the accidental death occurred.

During these 3 years the Sun Dance was held in the mountains, it became something of a symbol of defiance of the Whites. The first political importance for the Sun Dance was gained, since it had been held despite the disapproval of the agency officials. Densmore saw a Ute Sun Dance in 1914, and remarked that it was held that year against the orders of the agency (Densmore, 1922, p. 79).

When Steward was present in 1932, he believed the ceremony had become so commercialized that it no longer had any meaning for most of the spectators, although the participants took it seriously, dancing for cures for themselves or members of their families. Many of the people present used the holiday atmosphere as an excuse to become drunk. No seriousness of purpose was evident among the spectators, and it appeared to Steward that the whole ceremony would disappear in a few years (Steward, personal communication). What kept the Sun Dance alive was probably the realization on the part of the Indians that the agency would like to have it disappear. The Ute were dissatisfied enough with their lives, and with White overlordship which the agency represented, that they would have kept it for this if for no other reason.

The series of changes in the culture that occurred after the reorganization of the tribal government in 1937 brought new insecurities into Ute culture. This has been discussed in the section on Cultural Background, but for the sake of emphasis, they are listed here. Economic insecurity which the Ute had learned to live with because they knew nothing else became even more of a problem. The policies of the new Tribal Business Committee in regard to land usage deprived some individuals of their land, and all farmers of their peace of mind. The social insecurity which was evidenced in the treatment the Indians had come to expect from the Whites living in the vicinity and from the agency officials was extended to include mixbloods who were in control of the Government. Political insecurity was a new frustration for the Ute. Always before, their spokesmen could be expected to voice the wishes of the people. The Tribal Business Committee rarely even asked for opinions, however, preferring to follow the policies dictated by the agency. This was the cultural setting in which I found the Ute, and the Sun Dance when I witnessed it in 1948 and 1949.

THE MODERN SUN DANCE

The present Sun Dance as witnessed in 1948 and 1949 still retains elements that were present when it was introduced. The dance form changes, however, each time it is given in response to instructions received by the participants in dreams. Some elements have become nonfunctional and have died out. Others have been incorporated into the total pattern so that they appear to be old. The following description is based on the present dance, but additions and subtractions from the old form of the dance will be noted where they are known to have occurred.

The dance is initiated during the last day of the Uintah Bear Dance in the spring when the old chiefs of the tribe gather together and decide who is to be the leader of the Sun Dance. Several men who have dreamed that they should lead the dance are interviewed before this time and their dreams are discussed. Sometimes the leadership is shared by two or three such men. A date is set coinciding with the full moon, usually late in July after the ground has been thoroughly dried out. This is an old practice among the Wind River Shoshone, according to Clark (1885, p. 361).

Individual dancers may pledge to dance with one or another of the leaders or may come in on their own, depending on what they have dreamed. Dancers who dance independently usually have been dancing a number of years, and there is a feeling of compulsion among them that continued dancing is necessary in order to keep a cure originally effected by dancing, or to renew shamanistic power that tends to disintegrate and become dangerous with too much use. Renewal is accomplished by contact with the supernatural during the Sun Dance.

It falls upon the leader to coordinate all aspects of the Sun Dance. With his assistants he must organize the work groups, handle the finances, direct the song practice, and supervise the actual construction of the lodge. Before the dance, he must instruct the novices who are pledged to dance under his leadership in the proper actions and attitudes. If one of the dancers becomes sick while dancing or faints from exhaustion, he must either provide for the services of a shaman or, if a shaman himself, take care of the sick man.

It is modern practice to receive money for the feast which follows the dance and to pay the work groups from funds allocated by the Tribal Business Committee for that purpose. The money received from the sale of tickets to White spectators, and from the sale of food and drink concessions is given away to Indian visitors after the dance to defray their expenses. The dancers are not paid, but a small sum of money is set aside to provide watermelon and soda pop for them after they get through dancing so they can replace lost body water. The Sun Dance leader and his assistant with a member of the Tribal Business Committee are in charge of purchases, payments to workers, and other financial matters.

The dance chief is the first to move to the dance grounds. He picks the site of the lodge, which must be within the camp circle, clockwise from the last site. He marks the spot with a small tree and sets his own camp directly west of it with the doorway to the east. His shelter must be either a tipi or a brush house made of poplar branches leaning against a rectangular framework. Another shelter or shade is built near his for the dancers. Here the dancers dress before the dance and here the drums and the buffalo head are kept. If the wind blows cold at night, song practice may be held inside on the nights preceding the dance.

Song practice, which is held for 3 weeks in a desultory fashion near the gambling grounds, becomes very serious after everyone moves to the dance grounds. For 3 or 4 nights preceding the dance, the Ute gather around the drum in front of the dance leader's tent to rehearse. Individuals who have dreamed songs teach them to the other drummers at this time, and old songs are revived. Since the Ute visit other tribes at Sun Dance time, songs that have been introduced on other reservations are also used. At present, many Ute feel that to have a song sung at the Sun Dance that has been dreamed might shorten one's life. The dancers, however, say that they can feel the power in the dreamed songs, and prefer them to the ones that have been deliberately composed.

As other people begin to move into the camp grounds, it is the leader's duty to see that they are placed within the circle where they ought to go. Most families return to the same place year after year, but if there is any doubt about who should occupy a campsite, the dance leader is appealed to for a decision. The Northern Ute camp circle is 300 to 400 yards in diameter, with an opening to the east. In 1948 and 1949 there were approximately 50 camps around the circle, with 2 to 10 people per camp. Visiting Indians camped to the west of the circle.

The morning of the day before the dance, the dance leader borrows a truck from the agency and takes his work group out into the mountains after the lodge poles. When possible, war veterans are picked because it is thought that the undertaking is fraught with danger. The poles are not scouted for or treated as enemies as was the custom elsewhere in the Plains. The center pole, a cottonwood, is chosen, prayed over, and cut down. It should be about 12 inches thick at the base, and be forked 20 feet above the ground. Twelve smaller poles (5 inches through and 10 feet long) are cut with little ceremony, and a number of rafters and perimeter poles of pine, chosen for their straightness, are cut down at the same time. The load is hauled to within one-half mile east of the dance grounds and dumped.

Formerly, the next morning everyone dressed in aboriginal costume and the sham battle was held (Lowie, 1919, p. 407). A brave man shot the center pole with an arrow, which was the signal for an attack by another group posing as Arapaho or Cheyenne warriors. The sham battle continued while the center pole was dragged into the camp circle. Ropes attached to the pole were fastened to the saddles of men on horseback to accomplish this. There was no feeling that bad luck would strike the camp if the pole touched the ground, and no ceremonial rests occurred as they did elsewhere on the Plains. When the skirmishing parties entered the camp circle, the sham battle turned into a parade. Both men and women rode beside the pole, and sang. Since the possessions of a dead man are buried with him or burned, the old costumes no longer exist, and the sham battle has been discontinued. The people can no longer dress the part.

A substitute for the sham battle which has also died out was the cowboy raid. The young men used to come riding into the camp circle from the east at daybreak. They shot their guns into the air, and lassoed dogs and children who were unwary enough to come within their range. Linton reports a similar mock raid in his article on the Comanche Sun Dance (Linton, 1935, p. 424). This was a clown invasion in which individuals smeared themselves with mud and chased people and animals all over the camp circle, hitting them with mud-soaked switches.

No ceremony attends the transporting of the center pole into the camp circle now. The dance leader merely gathers his work crew, helps them load all of the poles on a truck, and the load is then driven to the place previously chosen where the lodge is to be built.

The Northern Ute still believe that digging the hole for the center pole is a dangerous job. I was assigned the job in 1949, and was informed that when possible a non-Ute is always asked to dig this hole. Holes for the 12 side poles, however, may be dug by anyone willing to do this work. They were correctly placed by measuring the distance from the center pole to the side poles in the lodge that had been built the year before, and, using this measurement as a radius, circumscribing a circle around the center hole.

The side poles themselves are then cut to uniform length, and the center pole has the butt end flattened and the bark peeled for about 8 feet. Throughout the process of preparing the poles no special ceremony was observed, and no particular respect was shown to any of the poles. Red clay was then rubbed into the peeled surface of the center pole so that it would be cool to the dancers' touch, and a blue ring was painted around the pole at the top of the peeled portion. A bunch of willows was tied in the crotch with a piece of rope, and three colored flags were tied to the tops of the two forks.

No native symbolism is now attached to either the painted band or the bundle of willows. One informant stated that the willows kept the rafters from wedging the forks of the center pole apart, and thereby splitting it. Hoebel says in his article on the Hekandika Shoshone Sun Dance that the flags are for the dance leaders, one for each leader (Hoebel, 1935, p. 571). Since three men were associated in the Northern Ute dance as leaders in 1949, and two men the year before when two flags were used, perhaps this holds true for the Northern Ute as well. The flags may be a survival from the Plains practice in which dancers were tethered to the center pole by strips of rawhide, although torture elements were never accepted by the Ute. If it is a survival, however, it may have been diffused in this form from the Wind River Shoshone who did have torture elements.

When the center pole has been prepared for raising, the work crew gathers on either side of the pole. Extra workers may be recruited for this undertaking. In 1949, the dance leader had the Tribal Policeman stop the gambling that was being conducted near the concessions stand so that the people would come and help. At this time the pole is on its side so the willows will not be crushed, and has the butt end pointing east. The workers, including the dance leader, remove their hats, bow their heads, close their eyes, and to the rhythm of their clapping hands chant a prayer. At the conclusion of the prayer they make a feint at lifting the pole. On the third attempt the pole is raised. This is an illustration of how the old Plains sacred number four has been replaced by the Christian number three. Guy ropes are tied to the pole to direct its motion, and scissored poles are propped under it from time to time to let the workers rest. Once the pole is upright, it is oriented so that the crotch faces east, the forks north and south.

Time is a premium once the center pole is raised. Some workers put the side poles and rafters up while others gather brush for screening. A certain order is observed in placing the rafters, with the east-pointing rafter first, north second, south third, and the others clockwise, beginning with the one north of the entrance. By the time the side rafters are up, brush is ready to lean against the side of the lodge, and the lodge is soon completed. Except for the center pole, and the east-pointing rafter which has a dozen hawk feathers tied to it, no decoration is made of any part of the lodge at this time.

While the lodge is being built, the dancers are presumably resting and thinking of their coming ordeal. Actually some of the dancers work on the lodge, and the dance leader must always be present to supervise its construction. Before the dance begins all of the dancers must ceremonially wash, and put on the costumes they will wear for the first night of dancing. Some paint their faces and bodies, and others do not, depending on the instructions they have received in their dreams.

Just after sundown, the dancers file out of the shade that was constructed for their use and approach the rear of the lodge. The chorus follows the dancers, carrying the large two-headed drum. The dancers circle the lodge in a clockwise direction, blowing on the eagle-bone whistles that are suspended by a thong from their necks. They pass the entrance twice and enter the third time, thereby signifying their intention of staying in the lodge 3 days and 3 nights. The chorus follows and the crowd of spectators flow in.

Not all the dancers enter the lodge at this time. Those who have pledged to follow one or another of the leaders come in at this time. The dancers who have vowed to dance by themselves may come in any time up to midnight on the first night.

The dancers kneel before the center pole, facing east and chant a prayer terminated by the blowing of the eagle-bone whistles. As the dancers continue to kneel, the leader rises and walks to the center pole, where he prays for a moment in an almost inaudible voice. When he leaves the pole the dancers rise and take their positions near the back of the lodge. The leader stands directly under the east-pointing rafter, but other dancers are free to stand where they wish. All dancers maintain the same relative positions to the other dancers throughout the dance.

The fire is then lit by an old shaman who has the job of keeping it going throughout the night. Its real purpose is to keep the drum dry. Hoebel reports from the Hekandika Shoshone that any old man may perform the duty of fire tending (Hoebel, 1935, p. 574), but this position is an important one among the Northern Ute, and has been filled for many years by the same man. This man was, according to Steward, chosen in 1931 to lead the Uintah Bear Dance, and has continued in that office until the present (Steward, 1932, p. 264).

After the fire is lit, the chorus begins a song to the accompaniment of the drum. During the third song, the leader takes a short run toward the center pole and then hops slowly back, tooting his eagle-bone whistle. With the fourth song other dancers venture forth and dance up and back several times during each song until the crowd thins out. Then, one by one, the dancers go to sleep for the night, but the chorus continues to sing and drum until daybreak.

The next morning shortly before sunup, the dancers rise and warm themselves at the fire. Accompanied by guards, they drift out in twos and threes to an area not far from the lodge which they have for a latrine. A fire is kept burning there for their use by the same man who tends the fire in the lodge. I was interested to notice that these trips out were no less frequent toward the end of the dance than at the beginning in spite of the rigid restrictions on food and water.

A few minutes before the sun actually rises, the dancers shed their blankets and line up to the left and right of the center pole facing east. The chorus begins a sunrise song with more spirit than it has shown for hours. As the first rays hit the dancers, they lift their arms, and point them toward the sun, while blowing on their eagle-bone whistles. After a minute or two of this, they begin patting their bodies, washing in the sun's rays, and the spectators join in.

The dancers break formation when the song ends and, robed in their blankets, take seats around the fire. Each man holds a handful of earth from the foot of the center pole. A shaman sings a solo prayer and terminates it by blowing on his eagle-bone whistle. Then four songs are sung by all the dancers in unison, each ended in the same fashion. After the last song, the dancers pat their bodies with the earth from the foot of the center pole. The shaman then stands, goes to the pole, faces east with his back to the pole and prays in a low voice. When he finishes, the dancers go back to bed, and the chorus goes out for breakfast. In 1949, the shaman who led the prayers was not the dance leader, but a friend of his who had offered to dance with him.

In the period between the morning prayer and the start of the day's intermission, the buffalo head is hung from the center pole facing the dancers, and stalls are built so the dancers can have some privacy. The buffalo head used today is one stuffed by a taxidermist and is mounted on a board. It is the possession of the old shaman who tends the fire. Railings are set up to separate the dancers from the spectators and the chorus, and a strip of canvas is stretched around the back of the dancers' side of the lodge to protect them from the wind.

The dance follows this pattern until the third day when the dance leader announces he has dreamed it should end at such and such a time. The only important additions to the lodge are the Sun Dance doll, which is added in the intermission period on the second day, and, during the intermission on the third day, paths are dug in the ground for the dancers to dance in.

The dancers are expected to change costumes and paint during the intermission and generally ready themselves for the day's dance. Today, the costume consists of a Spanish shawl wrapped around the waist and held up by a beaded belt. A beaded pendant may be worn suspended from the neck, and white eagle plumes are attached to both little fingers. One dancer in 1949 wore a wig with two long, black braids. Old men are privileged to wear socks on their feet if they so desire, but everyone else must be barefoot.

The dance leader may ask the audience to cooperate in fulfilling a dream he has had that adds a new element to the dance. One I observed was reminiscent of an old Ghost Dance practice. The leader asked the women who were seated around the male chorus at the drum and who sang and shook branches to the drumbeat to shake out their shawls before leaving the dance lodge. Some women refused to comply with his request, but they were in the minority.

It has been mentioned that there are rigid restrictions on eating and drinking for the dancers. These are enforced by a group of special deputies appointed to guard the dancers. Spectators are forbidden to eat or drink in sight of the dancers in order to keep temptation from their minds. The dancers may smoke, however, and a calumet pipe was passed from dancer to dancer whenever the owner felt like lighting it up. The dancers are permitted to smoke manufactured cigarettes if they desire, and one dancer informed me that a definite preference is shown toward mentholated cigarettes.

During the third day's dancing the audience is very attentive. The dancers are expected to faint during the third day if they are going to, and this is good luck for everyone in the lodge. If this happens, the unconscious man is carried to his cubicle and left alone to recover consciousness when his visionary experience is over. It is traditional for such people to have dreams in which they drink large quantities of cool water. To the eye they appear refreshed when they begin to dance again.

A description was obtained of such a vision from one man. He said the buffalo head grew larger and larger and looked as though it were about to charge. Its eyes were fiery. Just before the animal charged, the man passed out. While unconscious he dreamed of walking to a stream east of the lodge, and of playing in the water. He said when he awoke he was no longer thirsty.

Curing of dancers and spectators is carried on by shamans during the last day. These shamans may be either dancers or old men among the spectators. Each will have with him a bundle of grass or an eagle-feather fan. If the sick person is not a dancer, he or she must remove his shoes before stepping into the sacred area of the lodge. The shaman prays silently over the person, bothing facing east, while the dancers dance with renewed vigor. Then the shaman brushes the patient's body from head to toe on all four sides and shakes the fan into the air to disperse the evil. This is repeated several times. If the shaman is a dancer he will blow on his eagle-bone whistle while performing the cure. The treatment is terminated by the shaman's sprinkling earth from the foot of the center pole over the sick person.

The dance ends suddenly and anticlimactically. At an appointed time the dancers just stop dancing and the chorus members leave their seats around the drum. The spectators wander outside the lodge and gather for the give-away which follows the dance. All Indian visitors sit in a line outside the lodge facing west, and several of the old Ute chiefs welcome them by shaking hands and saying a word to each. The presents, contributed by the dancers' families, are piled on a blanket in front of the Sun Dance pole and distributed to the guests. All the money from the sale of tickets to Whites is also given to the visitors at this time.

Meanwhile, the dancers change into their ordinary clothes, feast on watermelon, and when they have had enough they go to their camps. Aftereffects wear off with a good meal and a full night's sleep except for their feet, which remain tender for some time.

Special circumstances occurred during the Sun Dance of 1949, which should be reported. During the dance a violent wind arose, shaking the dance lodge. The branches laid against the lodge frame as a windbreak were blown off, and the whole lodge was pushed awry by the force of the wind. The center pole leaned to one side and pulled the side poles so that they threatened to come loose from the rafters they supported. The spectators ran to their camps for shelter from the wind and rain, only to find their own shades in the process of collapse. A halt was called to the dance while repairs were effected. An old dance lodge was torn up for braces and the sacred area west of the center pole was entered without protest from the dancers by spectators who sought to brace the side poles. A truck was backed into the lodge to push the center pole erect, during which time, the buffalo head was removed and set on the ground. After the lodge was rebuilt, the dance continued. Some of the spectators thought the lodge should be completely torn down and rebuilt. They maintained that the interruption was a sign that something had been done wrong, perhaps a dancer had broken his fast. The decision rested with the dance leader who said the dance should be finished, but there was much dissatisfaction among the old people.

The day after the dance a feast was held for all of the Ute and any of the Indian guests who cared to come. I was informed that the Ute had never used buffalo tongues for this feast although they knew the custom once existed among the Wind River Shoshone. They pointed out that the buffalo had disappeared from the Uintah Basin before the Sun Dance came in. Boiled beef is the main food item at the feast, but most families add their own bread and coffee to round out the meal. When the feast is over the camp breaks up and everyone goes home.

There is a rationalization of the Sun Dance into Christian symbolism. The individual Northern Ute may or may not believe in a Christian God, depending on his age, his degree of Indian blood, his economic position, and his experience. Most of them, however, agree that the Sun Dance is held in honor of the Christian God and know the Christian symbolism. The lodge itself is referred to as the House of God or the Indian Church. The center pole becomes the crucifix and the bundle of willows the body of Christ. The twelve side poles represent the Twelve Disciples and the sun is equated with the Christian God. The dancers walk around the lodge before entering, as "Christ walked around Jerusalem," and the three-night dance represents the "three nights that Christ was on the cross." The morning prayer becomes a prayer to the Christian God, and the hawk feathers on the east-pointing rafter become a guardian angel that looks after the dancers.

The social function of the Sun Dance has grown so that it has become more important than the Bear Dance as a social gathering. Visitors from neighboring reservations and the Ute themselves gather together to talk, watch the dance, gamble, and make friends. The practice of capturing a girl at night by drawing her into the folds of a blanket is a favorite with the young men. Flirtations have a chance to grow into serious attachments since about 10 days is given over to the Sun Dance. During the day, circumspect behavior is the rule, but at night, young people wander around in twos and threes seeking contacts.

NATIVISTIC ELEMENTS IN THE SUN DANCE

In 1946, on the Wind River Reservation at Fort Washakie, Wyo., a Sun Dance was held in honor of the returning soldiers. My informants told me that in 1947 the idea of a Victory Dance caught on at Fort Hall, Idaho, and at Whiterocks. During 1947, 1948, and 1949, two Sun Dances were held each summer on all three reservations. The only difference in form from the regular Sun Dance is that an American flag is raised each morning and lowered each evening during the Victory Dance, while no ceremony of this sort occurs in the regular Sun Dance.

Participants in the Victory Dance must be fullbloods. The dancers are mostly young men, and some are war veterans. The attitudes present in the spectators is about the same, however, except everyone realizes that this is a reaction among the young fullbloods against the existing state of affairs. A feeling exists among the spectators that the Sun Dance is the perfect time for political action. Petitions are passed around among the fullbloods requesting that mixbloods be cut from the census roles, that the agent resign, that the Tribal Business Committee be recalled, that the Constitution and Charter of the Northern Ute be revoked.

Because I was a complete outsider, and might have outside influence, and because I was believed sympathetic, I was allowed to be present at some of the meetings that were held during the Sun Dance in 1949. Fullblood members of other tribes, Navajo, Southern Ute, Wind River Shoshone, and Bannock were present. I was told that similar meetings were held when visitors came to Fort Hall, or Fort Washakie, to attend the Sun Dances there.

Linton observed, "We may define a nativistic movement as any conscious, organized attempt on the part of a society's members to revive or perpetuate selected aspects of culture" (Linton, 1943, p. 230).

In terms of this definition, the Ute wish to revive the old political organization with their old chiefs as spokesmen for the people. They wish the Government to return to the practice of issuing rations so greater economic security may be obtained. They wish to remain individualists, and to participate or not as they see proper in cooperative schemes for land usage. They wish to control the spending of their own money in a manner satisfying to their personal desires rather than leaving it under agency control as it is now. They wish to disinherit the mixbloods who identify themselves with White culture and White attitudes, and who consider the fullbloods as an inferior group. Most of all, they want an end put to the dictatorial powers or the agent who interferes too much and too often in their lives.

These are the problems which the fullbloods talk about. They discuss ways and means of acting on these problems, and a growing feeling of unity is coming out of these discussions. In the peyote meetings during the rest of the year, these same matters are talked over in smaller, more intimate groups. The only instance to date where results have come from direct action by these discussant groups is the recall of one of the Tribal Business Committeemen for incompetency. This committeeman was elected to office on the strength of his success as a Sun Dance leader. He is a mixblood, and the fullbloods say of him that he used the Sun Dance to gain popularity so that he might be elected to fill a political office.

The actual Sun Dance ceremony is still taken very seriously by those who identify themselves with Indian culture. Individuals seek individual cures, and believe that they may achieve them by dancing and by faithfully observing the rules. In providing an answer to sickness, the most acute manifestation of insecurity, the Sun Dance is held in a reverent attitude by all of the people. As a symbol of the native culture, and as the rallying point for resistance to the overbearing White culture, the Sun Dance has an emotional value that is very strong in Northern Ute life.

It is interesting to see that the Sun Dance is spreading. Voget (1950, pp. 53-63) said the Crow recently adopted the Wind River Shoshone version of the Sun Dance after having lost their own version when the war complex died out in Crow culture. I was informed by an old Ute chief that requests were forwarded by mail for a dance leader to be sent to the Fish Lake Valley Paiute to direct a dance in 1950. Not all such efforts to transplant the dance have been successful, however. Steward mentions that the Sun Dance was introduced to the Shoshone at Elko, Nev., in 1935, but the people there did not accept it; it was too hard (Steward, 1941, p. 266). One wonders what conditions at Elko are like now, and whether the dance would be acceptable under the present conditions or not. This phenomenon of growth will determine whether the Sun Dance will be the vehicle to carry the nativistic movement arising on the Ute, Fort Hall Shoshone, and Wind River Shoshone Reservations throughout the Great Basin, or if something less dramatic, like peyotism, will be adopted for this function.

CONCLUSIONS

In the pre-White contact period, the social organization of the Northern Ute was changing. The introduction of the horse allowed larger groups to live together, in cooperation for the food quest. The horse gave the Utes an opportunity to range more widely than was possible for individuals, or family groups, and permitted a surplus of food to be available at all times in the horses themselves. Horses were eaten when other food was unobtainable. Rifles made for more efficient hunting, and led to competition for choice hunting grounds as the game became scarce. Families were attracted to leaders with reputations as successful hunters, and war leaders and horse bands began to crystallize. At this time religion was oriented toward curing. The Bear Dance and Round Dance were both social and curing ceremonies. Participation was individual, although these ceremonies might be said to be embryonic collective performances.

The Mormon settlers arrived on the scene at this time and inaugurated the White contact and the reservation period. The Ute had had contact with White traders and fur trappers for over 10 years before this but without the pressures a large farming population brings. The settlers took the fertile river valleys for their farms where the Ute had once hunted deer and antelope. The Ute were pushed into refuge areas to the south and east and eventually were forced to beg or steal food from the settlers to supplement their diminished diet. Both Walker and Black Hawk led their bands in raiding the White settlements and immigrant wagon trains, and for a short time substituted these raiding activities for hunting. Eventually, however, all the Ute were pushed onto reservations where they were dependent on rations from the Government to survive.

The Ute were restless under the restrictions of reservation life, and from time to time threatened to resort to war to push the settlers from their old hunting grounds. This was especially marked in the 1870's when communication routes were very crude, and the Government rations did not always arrive when scheduled.

The general war did not materialize, however, and the Sun Dance was introduced. With settled habitation, came epidemics of smallpox and venereal disease that were beyond the power of the shaman to cure with the simple remedies he controlled. The Sun Dance was a new and dramatic ceremony that demanded more of the participants than had the Bear Dance or Round Dance. Although under the control of a shamanistic leader, participation in the ceremony was still on an individual level, and was the effort of an individual to obtain a personal cure for some malady. By 1890, the Sun Dance was an annual affair held as a curing ceremonial enabling dancers to obtain supernatural power to cure by being cured in this fashion themselves. Christian elements were incorporated into the dance either through the proselytizing of the Wind River Shoshone around 1890, or later through the peyote church about 1906.

An apathy stole over the Ute from 1900 on. Dr. Steward reported that the Sun Dance had become a commercialized tourist attraction by 1932, but still retained its curing function. The nativistic feature which marks the Sun Dance today was not in evidence at that time. With the reorganization of the tribal government, under the provisions of the Wheeler-Howard Act, however, a change took place. A historically oriented sketch of Government policy is imperative to the understanding of the effect that the 1937 reorganization had upon the Ute.

Government policy toward the Ute has never been consistent. Up until 1868, the Government had no positive policy except that of trying to keep the Indians from raiding the White settlers. From 1868 to 1887, the Ute agents, one by one, tried to turn the Indians into communal farmers. This effort met with a notable lack of success. In 1887, the General Allotment Act was passed, which broke up the reservations and gave a portion of land to each adult Indian, to be worked individually. By 1905 the Indians were all settled on their allotments, and the unallotted land on the reservation was thrown open to White entry. In protest against this act, 600 Indians left the reservation and traveled east. They were rounded up in Wyoming and settled in South Dakota on the Pine Ridge Sioux Reservation until they had eaten all their cattle and asked to be taken home.

Until 1937 this policy of forcing the Indians to live on their allotments was continued. At that time, however, a new philosophy of collectivism was introduced with the adoption of the charter and constitution written for the Ute by the Indian Office. The Ute were still too individualistic to handle such a system of government, however, and the political control of the tribe fell into the hands of the educated minority who proceeded to take personal advantage of their position. In turn for well-paying jobs provided them by the newly adopted constitution, this minority attempted to carry out the orders of the agent in rebuilding the economic system of the tribe. Long-standing debts against individual allotments for clearing and improving the land were settled by foreclosure, and the individual's lot became hard indeed.

This is surely an indictment against Government policy toward the Indians. The high ideals of the Indian Office were not realized in the application of them, and the emphasis on native values was unrealistically placed. Individualism is perhaps the value most emphasized in Ute culture, but this was ignored in favor of an overall collectivism which Collier believed was basic to Indian culture everywhere.

For the individual Ute today, the Sun Dance offers the only real means of obtaining recognition from the group. Exhibitionism is a prominent feature of the dance, and the individual who channels his exhibitionist tendencies into culturally acceptable ways is rewarded by the culture. The individual who has visionary experiences and becomes a shaman as a result of Sun Dancing acquires prestige. This prestige may be formally recognized by appointment to political committees as an important man, or election to political office as a representative of the people. Most often, however, rewards are to be found in increased prestige only, without the formal recognition.

The Sun Dance has become the binding factor for all of the Northern Ute who have remained culturally Indian. Those who have become oriented toward White values do not partake. It is the symbol of the native culture which has practically disappeared and all of the frustrations inherent in an acculturation situation are expressed through it. At the same time it has integrated this nativistic preoccupation with the value system in White culture. Christian symbolism has been attributed to various elements of the dance form, and the ceremony itself is held in honor of a Christian God.

The nativistic rejuvenation that exists at this time is pointed out by champions of Indian Agency policy as indicative of the successful guiding of Indian acculturation. That a feeling of unity among Indians exists, and is a growing phenomenon, cannot be denied, and that the Wheeler-Howard Act as administered by the Indian Service is the cause seems incontrovertible. However, on close analysis it appears that this is a reaction against this policy rather than a positive result of it. The fullbloods feel that they have been betrayed to the Whites by their usually better educated mixblood tribe members, who have become their official spokesmen under this program.

I have stated elsewhere in this paper that revivalistic nativism has grown out of the social, economic, and political insecurities that beset the Ute. The lack of quantitative data in substantiation of this statement is unfortunate, but unavoidable. Quantitative data is not available, because it has not been compiled. In place of it I have been forced to rely on the statements of informants as to the nature of interracial contacts, of agency policies, and of economic conditions. If these statements may be considered as typical, then no doubt can be held as to the presence of insecurity. The insecurity must be measured, furthermore, in terms of individual behavior, rather than empirically by psychological tests. This makes evaluation for comparative purposes with similar studies difficult. Until psychological tests are given and more complete statistics are made available on economic conditions, we must rely upon the testimony of informants and observers.

I have tried to show in this paper that the Sun Dance was adopted to fit a cultural need, and that it changed its role in the culture as the culture's needs changed. Cause here may be figured in terms of a changing subsistence economy which resulted in economic insecurity. The horse, the rifle, and the White settlers all contributed to making the natural food supply scarce, and forcing the Indians eventually to depend on the generosity of the Government for support. This led to social insecurity, as evidenced by the racial prejudices which have grown up owing to this inferiority of their society in terms of competition. The political insecurity which has grown out of the application of the Wheeler-Howard Act has increased other insecurities.

It may be said that revivalistic-nativistic movements are attempts to recapture a culture through a supernatural medium after realistic, direct methods of retaining that culture have failed. Insecurities for the Ute existing in their aboriginal state due to the inhospitable environment were combated by supernatural means. It is suggestive, however, that where nativistic movements arise will be found economic and social and political insecurity among the participant people. Such situations occur only when two patterns of culture are in conflict. One sign of stress is the turning of aggressive feelings inward upon members of the culture when the dominant culture is strong enough to frustrate aggressive acts toward itself. A rising incidence of witchcraft among the Navaho (Kluckhohn, 1944) and Zuni (Adair, personal communication) is an example.

Outside of actual rebellion, the only aggression possible for members of a submissive culture to show is a sullen, negativistic, noncooperation with administrative officials of the dominant culture. The Ute are in this stage, and, except for their paltry number, would be considered dangerous to the dominant society if their attitude were more widely shared. Among African Negroes, this stage is common and is giving much concern to the colonizing powers.

It is obvious that if nativistic movements are a reaction against a dominant culture by a suppressed one that the question of ultimate values must be weighed carefully. The technical superiorities in agriculture and medicine, for example, of Western European society may well be refused acceptance by peoples who hate the exploitation which must be accepted with them. This is obviously unfortunate. However, where nativistic movements arise, be they in the guise of cultural revivalism, messianic movements, or incipient nationalism, these problems also arise, and must be solved for the good of all concerned. The general question of nativistic movements is beyond the scope of this paper, but further research in this field should be immensely rewarding.

In conclusion, the Sun Dance of the Northern Ute should be historically oriented to the Sun Dance of the Plains. Shimkin has made the latest historical reconstruction of the Plains Sun Dance.

Shimkin postulates:

> . . . great elaboration of the original ritual appears to have developed in at least three centers: the Arapaho-Cheyenne, the Blackfoot and the Dakota. The first center, possibly affected by eastern and southern influences, may have contributed the concept of a vow as a basis of the Sun Dance, a complex mythology and symbolism; fraternity control of the ceremony, with adoption and wife exchange; as well as other details such as the sunrise ceremony. In the second center might have grown a great enrichment of ties with the buffalo—especially the tongue ritual; elaboration of outlets for war prestige and wealth through ostentatious property disposal; and lesser items such as plumes suspended from the dancers' little fingers. Spier has demonstrated the likelihood of a Dakota origin for the torture elements. [Shimkin, 1953, p. 407.]

This leaves unsettled what the functional role of the Sun Dance was in these Plains tribes. It is not within the scope of this paper to discover the role for each tribe in which it was a cultural institution; to do so would necessitate a number of studies paralleling the one just completed for the Ute. However, we may point to Spier's words in his Sun Dance monograph for a clue. Spier says in sketching a generalized Plains Sun Dance, "The performance of the ceremony coincides very nearly with the summer buffalo hunt, on which occasion the entire tribe come together from their separate winter quarters and camps in a great circle" (Spier, 1921, p. 461). Here the primary function appears to be the reinforcement of the ties which held the group together. After spending the winter in small bands, it is conceivable that the larger group, or the tribe, needed an institution designed to induce a feeling of unity in its members. The attitudes necessary for group cooperation would have to be fostered. The Plains Sun Dance is a tribal ceremony, with functionaries drawn from the public at large. Among some tribes, as the Cheyenne, Oglala, and Kiowa, the attendance of every able-bodied adult in the tribe was compulsory (Spier, 1921, p. 459). Quarreling was forbidden, and the military societies strictly enforced the peaceful conduct of all members of the group to insure the proper atmosphere for the dance.

The feeling is present among the Northern Ute that everyone who attends the Sun Dance will benefit from being present, and the dance is a definite force for integration since it is held for the public good. The conditions operative today in Ute culture cannot be compared with conditions operative among the Plains Indians at the height of their cultural florescence, however, and the roles played by the Sun Dance among the Northern Ute are understandably different from those of one hundred years ago among the Plains Indians.

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Some Manifestations of Water in Mesoamerican Art

By ROBERT L. RANDS

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SOME MANIFESTATIONS OF WATER IN MESOAMERICAN ART [1]

By Robert L. Rands

INTRODUCTION

The aboriginal art of Mesoamerica was varied and rich in its portrayal of water. Closely related were the agricultural base of civilization and the generally heavy rainfall—necessary for the growth of crops, though at times too heavy—which played an important part in influencing the art. In view of the Mesoamerican practice of personifying natural forces it is not surprising that supernatural beings should repeatedly be delineated in the act of producing rainwater.

A great deal of scholarship has been directed toward the elucidation of certain Mesoamerican art motifs and religious concepts pertaining to rainfall. Commentators on the codices such as Seler (1902–23), Schellhas (1904), Förstemann (1906), and Tozzer and Allen (1910) have been particularly active in this, while Thompson (1950, 1951) has made the Maya hieroglyphs the primary focus of his detailed investigations of water symbolism. The present study can hope to contribute little toward a better understanding of aquatic motifs in the codices. Rather, conclusions which have been drawn from past studies of the codices form a springboard from which to attack the problems set forth in the present paper.

Broadly speaking, the aim of the present investigation is to extend the identification of falling water to certain motifs in the sculptural and ceramic art of Mesoamerica. Working from the known to the unknown, the commonly accepted depictions of water in the codices and, more rarely, murals, are made the basis for the identifications. When appearing to be applicable, modern folk tales and religious beliefs, mythological passages from the historical sources, and ritual practices are used to bolster the interpretations.

---

[1] The writer wishes to express his appreciation for the advice, criticism, and encouragement given by numerous individuals: Tatiana Proskouriakoff and J. Eric S. Thompson, of the Department of Archaeology, Carnegie Institution of Washington; Ralph L. Roys, affiliate of the same Institution; Dr. Linton Satterthwaite, Jr., the University Museum, University of Pennsylvania; Dr. Gordon R. Willey, Peabody Museum of Archaeology and Ethnology, Harvard University; and Dr. Matthew W. Stirling, Bureau of American Ethnology. Extensive aid on the illustrations was given by Boyd Wettlaufer and the writer's wife, Barbara C. Rands.

Others have ventured into this siren's field of art interpretation. Von Winning (1947 a) for Central Mexican antiquities and Spinden (1913, 1928 b) for Maya sculpture may especially be mentioned as proponents of certain designs as falling water. Like the present writer, Thompson follows Spinden in making some highly important identifications on the Maya monuments (Spinden, 1913, figs. 84, 85; Thompson, 1950, fig. 44, nos. 1–3). These suggestions have not gone completely unchallenged, however. An identification of falling grain seems to be preferred, in certain representations, by Proskouriakoff (1950, fig. 13y–b′, pp. 109, 132, 146). Other explanations might be adduced. The field is a complex one, fraught with dangers of many sorts. Once one commences tracking down motifs which have indubitable resemblance to known portrayals of water, artistic forms which are partially comparable or vaguely so come repeatedly to light. Soon, in the words of the poet, one sees "water, water, everywhere." It is hoped in the present paper to systematize the argument for the identification of water and, thereby, to review some of the methodological problems involved in artistic analyses of the present type.

By virtue of its subject matter, the present investigation inevitably touches upon a very distinct sort of problem. A recent series of papers has stressed the possibility of trans-Pacific contact between Southeast Asia and Mesoamerica (Heine-Geldern and Ekholm, 1951; Ekholm, 1950, 1953). One of the more important evidences cited is the striking correspondence in the depiction of the lotus or water lily in Maya and in Hindu-Buddhist sculpture. Recently, occurrences of the water lily in Maya art were traced by the present writer (Rands, 1953). This was not done for the purpose of drawing conclusions about the alleged Asiatic contact but to present data upon which these conclusions, or others pertaining to intersite connections within the Maya area, could in part be drawn. Among the correspondences which have been noted between the water lily in Indian and Mayan art are certain portions of the body with which the plant is arbitrarily shown—e.g., hand and mouth. Additional associations characterize the water lily in Maya art; thus, the flower grows from the head or eye, is intimately associated with the fish and jaguar, and so on.

The importance of these facts to the present study is simple enough. If the identifications of water in Maya art which will be made are substantially correct, these same associations, held by the water lily, occur repeatedly with the falling streams of water. Unless it can be shown that the same attributes are given water in Hindu-Buddhist art, the possibility of convergence is considerably increased as an explanation for the similarity of the floral treatments in the two hemispheres. This is to say that in Maya art certain associations given the water lily may have been transferred from associations originally given to streams of rainwater. Even if the reverse is true, and the floral associations preceded the aquatic ones, a new dimension is introduced into the study of the water lily. It is one with which the proponents of trans-Pacific contact will have to reckon.

Three broad avenues of investigation, which appear to be of tangible significance, emerge from the attempt to identify water. These problems are: (1) To explore the details of Mesoamerican religion—the glyphs, deities, and mythic situations—with which water is apt to occur. This should provide added information on an important aspect of culture in Mesoamerica and, thereby, help to fill in the ethnographic picture of earlier times. The "conjunctive approach" of Taylor (1948) should be compared. (2) To note typological distributions and variations of the artistic forms in time and space. Historical insight should be obtained. Unfortunately, however, examples which can confidently be identified as water are rather scarce outside of the codices. Accordingly, the determination of trends has to be on an impressionistic rather than statistical basis. (3) To examine the similarity in the associations given falling water and the water-lily flower, noting the possible role of convergence or "substitution" (cf. Spinden, 1913, pp. 39–46, 122–124). This has importance, both for the problem of possible Asiatic connections, as raised by Heine-Geldern and Ekholm (1951), and for an understanding of the development of Maya art and religion.

THE BETTER ESTABLISHED OCCURRENCES OF WATER

TYPES OF ASSOCIATIONS

In the varied cultural phenomena of Mesoamerica, it is possible to isolate a number of distinctive associations with which streams of falling water clearly occur. The nature of the proof—or better, overwhelming weight of evidence—which permits us to say that water is intended, differs according to the specific association. Sometimes, as has been indicated, the telling evidence is derived from designs in the codices, with or without an accompanying explanation in European gloss. Sometimes the proof is to be found in documentary sources dating from the period immediately following the Spanish Conquest. Again, it lies in present-day Mesoamerican beliefs or practices which, with apparent correctness, can be regarded as survivals from pre-Spanish times. Previous investigations have drawn together a number of these evidences. As a result of all this, several associations which were quite surely accorded rainwater in the period prior to the Spanish Conquest may be recognized. Some of these are:

(1) The emergence of water from a container, usually an inverted jar or other pottery vessel. An analogy to the human method of water storage is indicated.

(2) The emergence of water from some liquid-secreting portion of the body. An analogy, apparently, was drawn between the fluid in question, as produced by mundane beings, and rain as produced by supernatural ones. Thus, the production of rainwater seems to have been suggested by tears from the eyes, saliva from the mouth, milk from the female breast, urine or some other fluid from between the legs, and perhaps sweat from the pores of the body.

(3) The contact of water with some other portion of the body, which serves as the immediate source of the falling stream. Here, the analogy appears to have been with anatomical parts which would serve as temporary places for storing and then dispersing the water. Examples are: the mouth, where the cheeks form a somewhat expandable reservoir for holding water and the lips a means of ejecting it; the hands, from which water may be sprinkled. Here, perhaps, the sprinkling of water from an object held in the hands may also be mentioned.

(4) The occurrence of some foreign object, apparently of symbolic nature, within the falling water. The symbol may be a glyph, or it may merely be the representation of an object which seems to have strong connotative value.

It will be noted that the mouth qualifies as an anatomical association of potential importance, owing not only to its liquid-secreting function but to its pouchlike qualities, ideal for the temporary storage of water. Moreover, the passage of water through the mouth in drinking may have served to enhance its aquatic associations, while vomiting offers another physiological analogy upon which the emergence of water through the orifice might have been based.

More succinctly, these associations may be listed as follows:

(*a*) Water from container.
(*b*) Water from mouth.
(*c*) Water from eye.
(*d*) Water from breast.
(*e*) Water from between legs.
(*f*) Water from body (pores?).
(*g*) Water from hand.
(*h*) Water from object (other than container) held in hand.
(*i*) Waterlike design from head. (This, however, may not actually be intended as water.)
(*j*) Glyph in water.
(*k*) Object in water.

These categories appear in tables 1 to 3 and 6 under the broader heading, "Direct water associations." Obviously, although the singular is used, it may be that multiple containers, mouths, or other associated objects appear in a given representation.

The listing of these 11 direct associations does not imply that additional ones cannot be found in extant material from Mesoamerica. An attempt toward completeness has been made, however, in the case of liquid-secreting portions of the body. As a matter of fact, at one time or another during the archeological and protohistoric record, several of these associations seem to have been of minor importance. Artistic evidence would indicate that this is true of *c* to *f* (water from eyes, breasts, between legs, and body), and perhaps others.

The aquatic associations are not confined to the objects heretofore mentioned. Certain supernatural beings also recur with the streams of water, as the rain-producing agents. Several agents are recognized in the tables, under the heading "Water producers." Their more precise characteristics will be developed textually but, for general purposes, four broad classes may be abstracted: (1) anthropomorphic, with established pluvial associations, viz, deities of the rain; (2) anthropomorphic, but not known to function primarily as rain gods; (3) animals; and (4) composite monsters in which serpentine or saurian characteristics are pronounced. Some blurring of these categories occasionally exists.

For purposes of tabulation and effective analysis, the water producers are treated in a somewhat different way. The following categories are recognized:

(*a*) Tlaloc, Tlaloc variant.
(*b*) Anthropomorphic Long-nosed God.
(*c*) Female water deity.
(*d*) Black God (M, B).
(*e*) Miscellaneous anthropomorphic.
(*f*) Frog.
(*g*) Serpent.
(*h*) Jaguar.
(*i*) Bird.
(*j*) Miscellaneous animal.
(*k*) Serpentine-saurian monster.
(*l*) Detached rear head of monster.
(*m*) Other grotesque head, face.

Except for the grotesque face and the rear head of the saurian-serpentine monster, all are known to be water-producing agents in previously established portrayals of water.

Associations of yet another kind may be recognized. Certain themes or complex treatments seem often to have been introduced into portrayals of water. Tabulation of such recurrent patterns is attempted but, by their very nature, the associations require extended textual explanation. In the tables, they appear under the general heading "Configurations." The categories of this sort are:

(*a*) Death, misfortune, and destruction.
(*b*) Water descending upon horizontal surface water.
(*c*) Water descending upon figure.
(*d*) The bending-over rainmaker.
(*e*) The sky monster and its affiliates.
(*f*) Balanced water and vegetation.

Each of the configurations is known to occur in established portrayals of water.

The reality of the various associations of water has, up to this point, been affirmed but not demonstrated. Nonartistic data have an important story to tell in this connection. Not only does the accumulating knowledge of Mesoamerican hieroglyphic symbols and religion provide a broad background from which to approach the problem, but it repeatedly provides new evidence with which to bolster the conclusions. To cull the findings of others is anything but a thankless task. Yet to do so is somewhat apart from the primarily artistic aims of the present investigation. Therefore, other data, although significant, are confined to Appendix A; and elsewhere the argument that the water associations are actually represented is, as nearly as possible, developed along purely artistic lines. Separated in this way from the other types of data, the artistic evidences may perhaps be more clearly seen.

Still, it is necessary to make certain fundamental assumptions, on which there will probably be general agreement. (1) Designs showing water have been successfully identified in the Mexican and Maya codices by previous workers. (2) Many of the beings shown in association with falling water in the codices are supernaturals connected with rainfall; hence, the water is actually intended as rain. (3) Therefore, if outside the codices a given design occurs in connection with what seems to be a supernatural being, the falling of rain may be depicted, whereas if the being lacks obvious supernatural attributes, rain itself or even water per se is not so likely to be shown. Instead, some sort of paraphernalia or other object which may symbolize rainfall would appear to be a relatively greater possibility. (4) Hence, when religious and symbolic attributes are indicated, it may be that some liquid other than water is depicted but that it is meant to symbolize water. Here, it is necessary to refer to nonartistic data, for there are good evidences that liquids such as balche sometimes served to symbolize rainwater in Mesoamerican religious practices.

Except for the first and fourth, these assumptions are not of immediate significance to the present thesis. Yet the fourth assumption rests upon the second and third, so all have their importance. In the following passages, the identifications will usually be made as "water" or "probably water" without reference to the possibility that some other liquid which symbolizes water may be portrayed. If the four assumptions are correct, this procedure should be thoroughly justified. The important concept—rainfall—would not be altered. It is recognized that there is often great difficulty in determining whether a being in the sculptures is "supernatural" or "mundane." Common-sense judgments and the accumulated background knowledge built up from past studies must be relied upon.

For the previously established portrayals of water in the codices, therefore, it is sufficient to tabulate the individual occurrences and restrict discussion to especially informative examples and general trends. Added discussion is required as consideration is given to representations which are increasingly tenuous in their identification.

THE MAYA CODICES

The most distinctive water scene in the three Maya codices is that on page 74 of the Dresden manuscript (table 1; pl. 72). Other representations of falling water are quite frequent, consisting almost entirely of vertical blue or green lines or rows of dots, often against a lighter background of the same color. On Dresden 74, however, clearly outlined columns of falling water are depicted. Slightly undulating lines and rows of circlets mark the inner portions of the water; larger circles are placed along the margins; the vertically descending streams frequently jut out in rounded, slightly downward pointing projections. Although dots occur frequently, and projections rarely, on other representations of water in the Dresden Codex, these features are completely absent in the Madrid and Paris manuscripts.

Many of the water associations discussed herein occur on Dresden 74. A standing anthropomorphic figure with jaguar claws—Schellhas' Goddess I—leans forward while pouring water from an inverted jar. Bones decorate her skirt, which is also marked with green circles of the type that denote water elsewhere on the page. One or two glyphs appear in the water which she is pouring; the day sign Eb, without numerical coefficient, and a smaller, shell-shaped design which has been identified as zero or completion (Förstemann, 1906, p. 222; Spinden, 1913, p. 68) yet which may possibly be merely a shell without this significance.[2] Other streams of water gush from signs of the sun and moon. More water seems to flow from the mouth of the snake atop the head of Goddess I, although this water may, instead, be an extension of the stream that falls from the sun. An armed black god kneels at the bottom of the page, a "screeching" bird [3] atop his head. The rear portion of what seems to be his breechcloth closely parallels the color and markings of water elsewhere on the page. Apparently the breechcloth bears water symbols, although it is possible that an actual stream is intended, falling from the general region between the legs. Dominating the entire scene is a great column of water which descends from the mouth of a monster with downward pointing head. The creature's body is a band of astronomical symbols (or perhaps emerges from such a band); its leg, with cloven hoof, dangles from the sky.

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[2] Shells are frequently known to appear in Mexican, although not in other Maya, portrayals of falling water. They often occur in surface water in the Maya codices, however.

The prominence given the dragon in this aquatic setting attests to the general importance of the sky monster configuration. The creature on Dresden 74 has been identified as a crocodile by Förstemann (1906, p. 265) and as a lizard-crocodile-peccary-reptile by Tozzer and Allen (1910, pp. 287, 320, pl. 32, No. 6). Except for the absence of a rear head, it is a classic example of the serpentine-saurian dragon of the Maya with parallels in the sculptures and elsewhere in the codices. Thompson (1939) has held that the numerous bands of planetary symbols, from which rain is often shown falling, are intended as segments of the monster's body. If this is allowed, the configuration of the sky monster and the direct association of water with its body are well nigh ubiquitous in the codices. Such representations have not been tabulated, although Thompson's suggestion has much to recommend it. With a head attached, however, only one other planetary band occurs in the codices as a source of rainfall (Paris 21). Here it is impossible to tell if the monster is single- or double-headed, due to the obliteration of the design. In other cases, serpents are so placed as to give the appearance of being in the air and are, moreover, directly or indirectly connected with the production of water. Thus, the snake's body sometimes holds an inverted vessel from which water is spilling or has been emptied (Madrid 9(?), 31b(?), 14b). The snake also serves as an object upon which other water-pouring deities are standing (Madrid 13b, 30a). These celestial snakes are tabulated as having only a doubtful affiliation with the sky monster.

Another of the configurations prominently displayed on Dresden 74, the theme of death and destruction, characterizes additional water scenes in the codices. On Madrid 7b it is simply that the death god, A, is the water producer, a stream descending between his legs. On Madrid 32b a human figure is falling, head down and with eye closed in death, in a stream of water from the mouth of a variant of Goddess I. Madrid 32a, on the other hand, does not display any of the direct water associations. But rain is falling heavily from the sky band, a serpent is in the sky, and the armed black god strides militantly through the downpour.

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[3] The bird is described as a possible eagle by Tozzer and Allen (1910, pl. 20), as screeching and raging by Morley (1915, p. 32).

The bending-over rainmaker is present, in the person of Goddess I, on Dresden 43b as well as Dresden 74. In the latter case, however, the characteristic posture seems to result from the fact that she is leaning over her jar, while in the former her back seems almost to be deformed. It is a question whether the same concept is reflected. Her posture is upright in other codex portrayals.

Goddess I frequently presents strong feline aspects. Her jaguar features are pronounced on Dresden 74, where she not only has clawed hands and feet but a brownish body and spots on her legs, as well. Clothing prevents knowledge of the presence or absence of these jaguarlike features elsewhere on her body. On Dresden 67a her body is reddish-brown, and she has unmistakable jaguar paws, here marked with spots, for hands and feet. All of these features tend to indicate a connection of the jaguar with water, although elsewhere when Goddess I has aquatic associations she is lacking in feline attributes. On Madrid 30b, however, a small animal identified as a jaguar by Tozzer and Allen (1910, p. 356) sits on her outstretched hand, while streams of water gush from her breasts and between her legs, as well as from the animal's mouth (pl. 73, *a*).

Viewed as an isolated case, the position of the water-spitting jaguar in the goddess' hand would not evoke special comment. In other instances, however, it will be seen that objects held in the hand likewise serve as the origin of falling streams. These objects are clearly not containers in the usual sense, and some of them are of a rather specialized type. Perhaps the position of the jaguar on Madrid 30b reflects a related concept, although the argument cannot be pressed at this time.

The direct association of rainwater with the hand is also somewhat tenuous. On Madrid 33b a black god wears scorpion (?) claws[4] at his waist, and water pours out from them. The sprinkling of water from the hand is suggested. On Madrid 93c there seems to be no doubt that water is shown falling from the hand. It is sprinkled by human figures upon seated individuals, however, and a baptismal rite is apparently represented (Tozzer, 1941, p. 102). The Madrid 93c scene is unique among the tabulated portrayals from the Maya codices in that it does not occur within a passage in which water is prominently and repeatedly shown. This fact, coupled with the absence from the scene of a sky band, greatly lessens the possibility that rain is either pictured or symbolized.

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[4] The scorpion's sting is characteristically treated as a grasping claw or even as a hand in the Maya codices (Tozzer and Allen, 1910, p. 306, pl. 4, Nos. 1, 2).

Numerous glyphs occur in seemingly fortuitous contact with representations of water. This is well exemplified by Madrid 32a, where rain blankets the entire scene. Numerals are in the water which falls between the legs of Goddess I on Madrid 30b, 32b (pl. 73, *a*), although there seems no reason to regard them as falling in the streams in the way that appears to be true of Eb on Dresden 74. Paris 21 may warrant attention, however. In the midst of rain which descends from the body of a sky monster there appears a glyph of unknown meaning (glyph 321.1 of Gates, 1931, pp. 147–148) and a "sun medalion"—a kin sign within a circle from which four stylized serpent or bird heads radiate outward.[5]

The extended discussion which has been accorded certain rare or deviant associations of water should not be allowed to obscure the prominence of other traits. Water is poured from a container in some eight or nine codex scenes, falls from between the legs in six to eight scenes, and gushes from the mouth in five scenes (table 1, p. 376). The actual occurrence of water from the mouth is greater as it has this association with four frogs on Madrid 31a, two animals on Madrid 30b, and perhaps two serpentine creatures on Dresden 74. Of the direct water associations, then, these three—water from container, mouth, and between the legs—seem to have been of paramount importance during the comparatively late period from which the codices apparently date.

THE MEXICAN CODICES

Representations of water, blue or green in color, are frequent in the non-Maya codices of Mexico. Surface water is commonly depicted, rather than the rain descending from the sky that so often appears in the Maya codices; surface water, correspondingly, is relatively infrequent in the Maya manuscripts. Almost invariably Mexican water is shown topped with foam or branching into an angular, serrated outline. Although stylistically distinct, these branches faintly recall the projections that characterize a few portrayals of water in the Maya codices. The branches are frequently tipped with alternating circles and shells. This combination, unknown in Maya art, is sharply differentiated from the rows of dots that sometimes occur at the margins of Maya water. Lines, which often appear within Mexican water, are generally more wavy than the lines within water in the Maya codices. These Mexican features which, faintly and perhaps fortuitously, echo certain elements that occur in Maya water, combine to form a type of portrayal which is radically different from the water of the Maya codices.

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[5] Comparable medallions occur at Palenque and Piedras Negras (Maudslay, 1889–1902, vol. 4, pl. 6; Maler, 1901, pl. 19).

Elaborate scenes on pages 27 and 28 of the Borgian codex are difficult to classify but surely display several of the water associations (pl. 73, *b*). On each page the rain god Tlaloc is portrayed five times, being assigned to the four cardinal points and the fifth direction, the center. In each representation he is in the air, green columns of water falling from between his legs and in apparent connection with objects he holds in both of his outstretched hands.

According to Seler (1904, p. 269), each of the Tlalocs holds in his right hand an effigy jug with the features of the rain god. Effigy vessels with Tlaloc faces occur elsewhere in the codices and as archeological specimens. However, the so-called jugs on Borgian 27 and 28 are highly ornate and are apparently lacking an orifice of any type. Moreover, the water, as sometimes depicted, appears to descend from the god's right wrist rather than from the "jug." True, the water may conceivably be represented as flowing from the "jug" but behind the wrist. In some of the pictures this explanation seems plausible, although in others it would require extreme impressionism, not to say sloppiness, on the part of the artist. The associations most in keeping with a literal adherence to the portrayal are water from the wrist or wrist ornament (not hand!) and possibly water from an object which is not a vessel but is held in the hand. In Maya sculpture there will be occasion to note the attachment of waterlike designs to rain-god-like heads which are held in the hand. Perhaps the parallel is of importance in explaining the Borgian representations. Closer to home, Selden 9 portrays a full-figure Tlaloc that holds a Tlaloc head, from which drops of water are falling. The correspondence to the Borgian scenes is striking, and here again a container in the normal sense of the word is not indicated.

Yet so far as possible the Borgian scenes must be explained on their own merits, and the object held in the left hand of each Tlaloc figure would seem to offer valuable comparative evidence. This object is identified as a hatchet-shaped lightning serpent by Seler (1904, p. 269). By and large, the serpents appear more clearly to be sources of the falling water than is true of the small effigies held in the opposite hands. Nevertheless, the water below the left hand of each Tlaloc appears at times to issue from the god's wrist or hand instead of from the serpent. One might suppose that the same water-producing agent would occur consistently. Perhaps, then, this evidence demonstrates, more than it does anything else, that too literal adherence to the actual design often obscures the intended meaning. Elsewhere in the Mexican codices, however, the artists give every indication of having faithfully recorded the exact associations they desired for the falling streams. Arguments and rebuttals can be prolonged without reaching satisfactory conclusions about this highly interesting set of aquatic associations.

Various objects are pictured, apparently falling, in the columns of water below the serpents and Tlaloc effigies. The nature of the objects may be associated with the calendric division to which they are assigned, for the symbolism is sometimes beneficent, sometimes injurious (Seler, 1904, pp. 269–270). On Borgian 27, in the division assigned to the east, maize ears appear in the water; in the north, hatchets and a maize ear; in the west, a maize ear; in the south, maize ears and a hatchet with flame shooting from it; and in the center, spear thrower, darts, shield and banner, an ear of maize, a bone, and a skeletal figure of the death god. Here the theme of death and destruction is especially manifest. On page 28, in the division representing the south, small figures of Ehecatl appear, head downward, one in each of the falling streams.

On Borgian 27 and 28 as elsewhere, streams of water descend upon or in back of human or anthropomorphic figures. The water is not actually shown contacting the figures and may accordingly fall behind them in the Borgian portrayals. This is also true on Borgian 31 and Nuttall 19. On Vienna 12, however, a seated figure is clearly pouring water over himself from a jar. And on Nuttall 5 Tlaloc is depicted in the air, emptying from his half-everted jar a stream of water which splashes over the sitting figure of the supposedly historical personage, Lord Eight Ehecatl (Codex Nuttall, 1902, p. 27). Some of these occurrences do not particularly suggest the production of rain, although the occasional presence of the god Tlaloc may possibly argue for such a connection for the scenes as a whole.

Reminiscent of Borgian 27 and 28, various objects occur in falling streams of water in additional codex representations. On Laud 5, the conventionalized jawbone of a serpent appears in water that is poured upon a fire from a vessel. Definite glyphs, signs for the rubber ball, appear in streams of water that are poured from containers on Fejervary-Mayer 8 and 33.[5a] On Borgian 31 water arches from the mouths of two skulls; at the end of each stream, perhaps falling in the water, is another skull which has arms that terminate in claws.

The same theme is indicated on Rios (Vaticanus A) 4 where the water goddess, Chalchihuitlicue, is pictured in the midst of a torrent of water which is apparently descending from the sky (pl. 74, *a*). The accompanying text of this post-Conquest codex indicates that the scene treats of the previous destruction of the world by water (Kingsborough, 1830–48, vol. 6, pp. 172–173). Chalchihuitlicue is holding an inverted vessel.[6] An *atl*like design with circle-tipped prongs occurs below the container, apparently a small stream that is distinct from the general rush of waters, being dark green on a green background. Chalchihuitlicue is apparently adding to the deluge by pouring out another, smaller stream. A distinctly outlined design curls upward, around her knee. It has the branching prongs typical of water, though they are not tipped with circles. It appears very probable that this is yet another stream of water, which issues from the region of the goddess' genitalia.[7] Additional configurations are present in this scene. The theme of death and destruction is not necessarily to be inferred from the scene itself but is clearly recorded in the accompanying text. The area covered by the water—comparatively narrow at top but broad at the base of the representation—attests to the descent of water upon surface water.

[5a] The glyphs' association may, however, be primarily with the piles of firewood upon which the water descends, rather than with the water itself (cf. Seler, 1901–2, pp. 66, 181).

The latter configuration also appears on page 1 of the Codex Laud (fig. 14, *a*). Here, in a scene dominated by a large figure of the rain god Tlaloc, an anthropomorphic frog pours water from a half-inverted jar. The stream falls upon a foam- or wave-capped representation of surface water in which aquatic animals appear. It is also of interest that the frog leans forward slightly while emptying the jar; like other Mesoamerican rainmakers, it is bending over while at work.

The falling water on Laud 1 is highly atypical in design. Instead of branching into a number of comparatively narrow, angular prongs, it divides into two distinct streams which are uninterrupted in outline. While for the most part colored blue, the water is sharply differentiated from other representations in the Mexican codices by having narrow, uncolored bands along portions of the margins. It will be seen that probable representations of water in Maya sculpture are similarly characterized by a tendency to divide into semidistinct streams and by marginal bands. Likewise, streams of falling water on Nuttall 19 (fig. 14, *c*) are marked with protuberances which far more closely approach the projections diagnostic of Maya water than they do the serrated outlines so well-nigh ubiquitous in the Mexican portrayals.

The configuration of water and vegetation is remotely suggested on Codex Fejervary-Mayer 33. Here Chalchihuitlicue wears a complicated headdress that consists of a serpent head, jaguar ear, vegetal motif, and extended arm and hand; the hand grasps plumes that are attached to an inverted jar, from which a stream of water is descend-

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[6] The container is unusual in appearance, but similar sacrificial bowls, in the Borbonicus Codex and in stone, are discussed by MacCurdy (1910, pp. 392–393).

[7] On Borgian 27 and 28, as in the Maya codices, however, the water which descends between the legs is wide and columnar—a general liquid downpour—rather than, as here, as a comparatively narrow stream which seems to issue from a specific organ. Possibly a sash is shown, but if so it is treated in such a manner as to suggest and probably symbolize the descent of water.

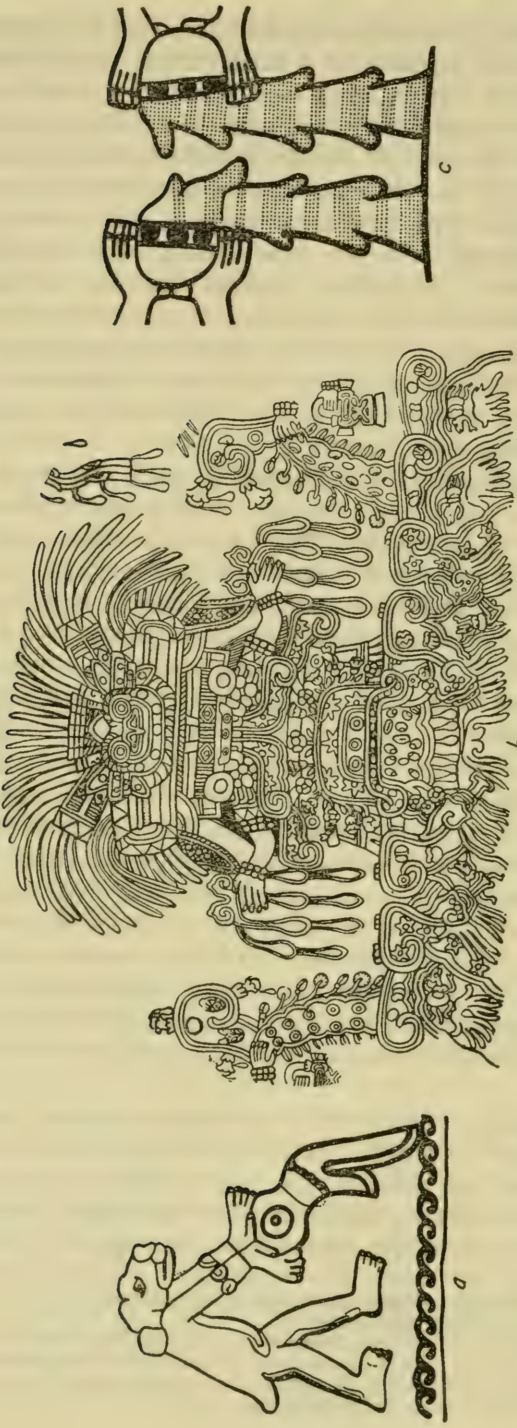

Figure 14.—*a*, Laud 1. *b*, Mural scene at Tepantitla, Teotihuacán (Entry 4). *c*, Nuttall 19.

ing. The maize god is pictured with her, vegetation also growing from his head.

Notwithstanding the possible incompleteness of table 1 for the Mexican codices, a totaling of the traits' occurrences should be helpful in indicating important trends. The most frequent of the direct water associations are the emergence of water from a container (some dozen scenes) and from the mouth (six scenes). Scenes showing water falling between the legs are rare (1 or more), but this is shown 10 times on Borgian 27 and 28. Objects, human figures or otherwise, appear to be falling in water rather frequently (4 scenes, including 10 of the 30 columns of water that appear on Borgian 27 and 28). Glyphs appear twice in the water, both times in the Fejervary-Mayer. When water does occur with the mouth, the snake is often involved (Baranda 3, Borgian 36, Dehesa 9). The only other animal engaged in the production of water is the frog (Laud 1). Of the deities, Tlaloc occurs as a water producer in four scenes (10 times on Borgian 27 and 28) and Chalchihuitlicue at least twice. All of the configurations except the sky monster seem to be present. The descent of water upon (or behind) a seated figure is most frequent (five scenes) but, as indicated above, different concepts may be involved. The death and destruction theme seemingly is featured in three scenes.

AZTEC AND TEOTIHUACAN MURALS, SCULPTURES, AND CERAMICS

The probability that water is portrayed is certainly less in the representations about to be discussed than was true for the Maya and Mexican codices. Nevertheless, the basic identifications as falling water have been made by previous workers, and on good grounds; for the artistic tradition is clearly related to that of the Aztec *atl* (water) sign and portrayal. Considerable continuity in the treatment of water from Teotihuacán times through the Tula Toltec (cf. Meyer, 1939, fig. 1) and up to the Aztec is indicated. In the codices, to be sure, the blue or green color serves as a guide that water rather than some other liquid is portrayed; blood, for example, is usually shown with the characteristic *atl* outline[8] but is red. The evidence of color may be utilized on murals but generally not on sculptures or ceramics. This factor, as well as the admittedly increasing divergence from late norms as one goes back in time, introduces a degree of doubt into the identifications. Yet in most cases the uncertainty would not seem to be great.

There can be no reasonable doubt that water is poured by the human figure in low relief on the lid of an Aztec stone box in the

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[8] Shells do not occur at the tip of the prongs in standard representations of blood.

British Museum (pl. 74, *b*, Entry 1).[9] The water branches into prongs tipped with alternating circles and shells, being stylistically identical to that pictured in the Mexican codices. Curiously, however, it divides into two streams; one falls and the other ascends. This is true, at least, if the two drops of water (which are essentially identical to the rather infrequent droplets of precipitation shown in the codices) are descending vertically; in such a case the jar is half inverted. If, on the other hand, the figure is shown head downward, the jar is fully inverted and the water spreads out at either side; but in such a case the drops are moving horizontally. Reminiscent of Borgian 27, ears of maize appear in the water. Elsewhere on the box an *ahuitzotl* occurs, water perhaps emerging from its body (Seler, 1902–23, p. 518).

Admittedly, footing is less secure when one turns to a consideration of waterlike designs in Teotihuacán art. Two basic problems may be made explicit from the start, in the form of questions. (1) Is the liquid which is so frequently portrayed—all sources apparently grant the presence of liquid of some sort—actually intended as water? Broadly speaking, earlier identifications of the designs favored pulque; this was the classic explanation accorded the motifs in the Teopancaxco murals. Especially with the discovery of the Tepantitla murals but even prior to this event, however, identifications of comparable motifs as water were gaining in ascendency. There is no need to review the literature on the subject in detail and, as stated earlier, the relationship of the motifs to pluvial symbolism need not necessarily rest on the actual portrayal of water. Because of the great abundance of these highly standardized designs, however, the problem does assume considerable importance. (2) Are the speechscroll-like designs with waterlike markings to be recognized as simple speech-scrolls, as speech or song with an aquatic import, or as actual representations of water emerging from the mouth?

Seler's description of the Teopancaxco murals (Entry 3) represents a point of view worth recording.

> All the figures have before their mouths a very large and broad spiral roll, adorned with flowers, which means [*cuicatl*], "adorned speech or song." They hold in the left hand a *copal-xiquipilli*, an incense bag, a well-known priestly attribute, and with the right hand they pour a liquid to the ground. This liquid has a border of scum, it is finely dotted, and it may be that it originally exhibited a blue colouring, but it is fringed with flowers like the sign of the adorned speech or song, and from this fact it must be inferred that this liquid is not meant as pure water. Most probably it may be explained as representing pulque [Seler, 1913, p. 200].

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[9] The probable dates of dedication and sources where the noncodex portrayals have been illustrated are indicated in the following fashion. An entry number is assigned to each water scene or group of essentially identical scenes. This number is given textually, in the appropriate table (1 or 2), and again in table 4, where it relates to these and additional data. Cross reference is thereby facilitated without interrupting the flow of textual discussion or over-crowding a given table.

The adornment of speechscrolls and liquid with the same type of flowers suggests a connection between them, although it is difficult to see why this indicates a portrayal of pulque rather than of pure water. Streams of falling water in the Borgian Codex are sometimes shown with flowerlike appendages, strongly reminiscent of those on the Teotihuacán designs (pl. 73, *b*, fig. 14, *b*). Foam or scum sometimes appear on surface water in the Mexican and Maya codices (e. g. fig. 14, *a*, and Dresden 65b, 67b). Could not the "incense bag" be a container from which water is cast upon the ground? (It does not, to be sure, look like a pottery vessel.)

For comparable designs, at least, the consensus of opinion seems to have moved away from the interpretation of pulque and toward that of water. Linné argued in 1942 (pp. 82–86) that an engraved vessel in Teotihuacán style from Calpulalpan (Entry 10) showed various types of water, beneficial and harmful, as sprinkled from the hand (cf. Linné, 1934, pp. 57, 58, 61.) In the same year, Caso (1942) identified designs in the newly discovered Tepantitla frescoes as water; like those from Teopancaxco the designs emerged from the hand but, in addition, they were clearly associated with representations of the rain god Tlaloc and descended upon undoubted portrayals of surface water (Entry 4). Since then Armillas (1947) and Villagra Caleti (1951), in one way or another, have emphasized the aquatic significance of varied Teotihuacán motifs. Von Winning's researches are especially pertinent. His identifications of dripping water include single droplets (1947 a, fig. 1); trilobal drops, in which three droplets merge at the top to comprise a composite element (1947 a, fig. 3, *g–n*); and a treble scroll, to which droplets are sometimes attached (Neys and Von Winning, 1946, figs. 1, 2, *e-i*). His primary discussions concern the motifs themselves, rather than their associations, but his references in the latter connection are significant. For, in Teotihuacán art, Von Winning mentions water in connection with the mouth (1948, p. 131; Neys and Von Winning, 1946, p. 84); the eye (Von Winning, 1947 a, p. 334, fig. 1, *h-m*); the hand (1947 a, p. 333); and an object for sprinkling connected with the hand (Neys and Von Winning, 1946, pp. 83–84). With some degree of probability, then, the existence of several of the direct water associations has already been shown for the Teotihuacán culture.

In a particularly convincing fashion, the emergence of water from the mouth and hands seems to be depicted in murals of the Palacio de Tepantitla, Teotihuacán (Entry 4, fig. 14, *b*). A standard of comparison is offered by designs which have commonly been identified as waves of surface water[10]—an interpretation supported by the presence of various shells and aquatic animals such as starfish and turtles (Caso, 1942, p. 134).[11] In repeated, virtually identical designs, a series of Tlaloc-like figures appear above the waves. The Tlalocs are flanked by human figures comparable to the "singing Pulque priests" of Teopancaxco. Both the Tlalocs and the priestly figures seem to serve as agents for the production or distribution of water, and various streams surely descend upon the surface water at the base of the design.

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[10] For a somewhat similar treatment of waves, cf. Fejervary-Mayer 3.

Caso (1942, p. 134) has identified the designs which pass from the Tlalocs' hands as water. Each design seems to spurt up from the palm of the hand and then cascade downward. Elongated, more or less individualized drops are shown, which closely correspond to the actual appearance of falling water. Although infrequent, somewhat comparable drops are not unknown in Aztec portrayals (pl. 74, *b*).[12] Several of these drops at Tepantitla are clearly shown as falling not from the hands themselves but from the adjacent wrist ornaments. Borgian 27 and 28 (pl. 73, *b*) come vividly into mind in this connection, and an association of water with Tlaloc's wristlet as well as with his hand may well be indicated.

The streams from the hands of the human figures are shown in somewhat different fashion. Rather than consisting of semi-individualized droplets, these designs are basically columnar in shape. In this they correspond to falling water as usually pictured in the Mexican codices. Like the codex portrayals of water, too, they are fringed with characteristic objects; apparently water-lily leaves and buds in the Tepantitla frescoes (fig. 14, *b*), as compared with flowers in the Borgian Codex (pl. 73, *b*) and shells in the typical Aztec portrayals (pl. 74, *b*). The resultant serrated outline is also a diagnostic of water in the codices. According to Caso (1942, p. 134), these priests cast seeds and jade beads to the earth. In view of the similarity of the designs to water, it would seem that these objects are intended to appear in falling liquid streams.

This fringed and serrated column does not totally comprise the design which emerges from each human hand, however. For the representation bifurcates, a portion rising in a speechscroll-like spiral. Yet the failure of this element to approach the mouth suggests that a speechscroll is not intended and, moreover, it is considerably wider than the well-established speechscrolls. To be sure, it may also be argued that water would not rise upward from the hand and that such an identification would, thereby, be equally inapplicable. Several factors severely minimize the weight of this objection, however.

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[11] Note identical "starfish" on the costumes of the so-called pulque priests at Teopancaxco. Von Winning's trilobal drop element also occurs on their dress (Peñafiel, 1900, pls. 82, 83, 85, 86, 87). The same objects adorn the costumes of comparable figures at Tetitla, who also seem to be sprinkling water (Entry 5).

[12] Cf. their association with Tlaloc, although not with his hand, in Magliabecchiano 44.

(1) The water may be tossed upward from the hand into the air. (2) The scrolled nature of the element seems consistent with this suggestion, for it could easily convey the impression that a liquid thrown into the air had been halted in its upward path and was caught in the wind before slowly commencing its descent. (3) However this may be, probable water elsewhere in the murals has been seen to surge upward from the hands of Tlaloc before it tumbles down. (4) Falling water is shown as bifurcated, with one branch probably rising, in Aztec sculpture (pl. 74, *b*). Accordingly, the rising nature of the design would not appear to impose particular difficulties in an identification of water. The case for the rising scroll depicting water does not rest solely upon this rebuttal, however, for positive evidences also exist. (1) The frequent occurrence of shells within the scroll is, alone, an indication of aquatic connections. (2) The rising scroll is fringed with floral motifs, like the lower section of the bifurcated design, and emerges from the same hand; hence the identity of the two elements seems probable and an identification of water indicated, inasmuch as the lower section has just been seen to display important correspondences to streams of falling water in the codices. (3) Most convincing of all as evidence that water is protrayed would appear to be the fact that in shape, as well as inner markings, the rising scroll precisely duplicates many a wave pictured in the surface water below.

Elsewhere in the Tepantitla murals are shown large, full-face Tlalocs without lower jaw. From behind the tusklike teeth of the upper jaw emerges a branching object, which has been identified as a bifurcated tongue (Caso, 1942, p. 134). That it may in reality portray water which gushes from the mouth is indicated by several factors. (1) In outline it is essentially identical to the waves. (2) "Starfish" are depicted within it and also in several of the waves. (3) It is not simply bifurcated but occurs as four more or less distinct elements, two of which are in part lower than and behind the others. The impression given by this is that of an undulating mass which is tumbling down—an appearance much more characteristic of water than of the tongue. The treatment is analogous to that of droplets from Tlaloc's hands in the same frescoes, where one drop emerges from behind another higher one.

The prolonged argument that water is portrayed need not be repeated for virtually identical Teotihuacán designs. Minute differences, on the other hand, do require additional comment. (1) Sometimes the design in question does not have the outline of a wave (Entry 8) but instead is marked with a row of hooks such as are acknowledged to indicate waves on numerous representations of surface water (including many in such codices as the Vienna, Fejervary-

Mayer, and Nuttall). The conceptualizations appear to be identical: the streams of falling water are simply given artistic attributes characteristic of surface water. (2) The design that spurts up from the hand does not always fall as droplets. In Entry 6 (the well-known "Goddess of Waters"), such designs trail off in horizontal bands which are decorated with hooks of the sort just discussed. (3) The rising, speechscroll-like elements frequently pass from the mouth rather than from the hand. An association with the mouth is consistent both for song or speech and for water, but when virtually identical scrolls emerge from the hand the sprinkling of water is much more readily suggested. Morever, the design from the mouth occasionally falls in a way characteristic of water (Entry 8) rather than spiraling outward in the typical speechscroll manner. This is not to deny that, say, ritual chants about rainfall may sometimes be indicated by the designs from the mouth. If one is to be consistent in assigning a specific meaning to this oft-repeated motif, however, water is much more clearly favored as a possibility than is the speechscroll.[13]

The Atetelco frescoes (Entry 2) are not as patent in the portrayal of water as are those from Tepantitla. Rather than wide scrolls of the Teopancaxco-Tepantitla sort, the designs emphasize recurving, composite spirals or simple ones of the typical speechscroll type. In place of realistic streams of the Tepantitla sort, there appear symbols that supposedly indicate water—Von Winning's treble scroll and trilobal drop elements. Drops are consistently shown falling from all these art forms, enhancing their probability as water. The motifs appear in connection with the mouths of humans, serpents, and composite feline monsters, as well as with conch shells that are worn or carried by human figures. In the latter case, it would seem that the scrolls are emerging from the spires of the conch shells. Appearing within the more elaborate scrolls are cross sections of shells and the trilobal drop and treble scroll symbols. Such occurrences suggest the existence of both objects and "glyphs" in the falling streams.

The most that can be hoped for the tabulated Teotihuacán designs (table 1) is that they begin to represent the range of variation in the treatment of falling water at the site. Water from the mouth and, especially, the hand are the direct water associations given greatest prominence. Possibly the consensus of opinion which would regard all the spirals from the mouth as speechscrolls is correct, after all; but several different treatments would still remain as associations of the mouth and water. The themes of water descending on surface water and balanced water and vegetation are very important. Tlaloc and anthropomorphic ("priestly") figures serve most frequently as the water producers, although serpents, jaguars, birds, composite animals, and a female figure also have this function. Additional direct water associations exist. Objects appear in falling water, probably including shells, seeds, flowers, signs for jade, and various water symbols. It seems appropriate to classify some of these examples either as objects or glyphs in water. Von Winning's designs showing the supposed associations of the eye with water have not been tabulated, partly because the "eye" does not seem to occur as a source of the streams. Probably, however, these eyelike designs can be regarded as an additional object which characteristically is shown falling in the water.[14] Nor have the objects identified by Neys and Von Winning (1946) as sprinklers for water been made the subject of tabulation. Much of their material is quite suggestive, and their figure 2, *a*, seems surely to show the sprinkling of some sort of liquid. The red color of the drops suggests the portrayal of blood, however.

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[13] That some convergence took place, between art forms if not the underlying concepts, is indicated by designs associated with one of the Teopancaxco figures (Peñafiel, 1900, pl. 87). Here a spiral from the mouth is narrow, resembling a typical speechscroll in every respect. It is symetrically balanced by a narrow scrolling band, marked with wavelike hooks, that passes either from the hand or from a staff, possibly a rattle, that is held in the hand.

SUMMARY

Indubitable occurrences of falling water are to be found in the Maya and Mexican codices, in Aztec sculpture, and presumably in the murals, sculptures and ceramic art of Teotihuacán. The Teotihuacán examples, while somewhat less certain than the others, are of great significance because they appear to push back a number of the water associations to the early Classic period in Mesoamerica. A minimal dating is thereby provided. Briefly restated, five major reasons may be listed for accepting the identifications of falling water at Teotihuacán. These consist of the often realistic nature of the portrayals; the correspondences of the portrayals to water in the Mexican codices; the specific correspondences of the portrayals to what must be surface water in Teotihuacán art; the frequent proximity of the portrayals to this surface water; and the repeated associations of the portrayals with a goggle-eyed deity who must be a forerunner of the Aztec rain god Tlaloc. It is also worthy of comment that at Atetelco, Teotihuacán, previously identified water symbols (the trilobal drop element and treble scroll) substitute for the designs recognized herein as portrayals of water. This strongly suggests that the same concept was manifested under different art forms.

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[14] An eye may occur in water poured from a vessel in Mexican Codex art (Hamburg Codex, concerning the authenticity of which there is, however, some doubt). For additional support of Von Winning's identification, see probable surface water at Tetitla (Villagra Caleti, 1951, fig. 13; Gordon, 1905, p. 140, pl. 4, *b*; and Borgian 72 (table 1)).

The existence of most of the water associations is established on the basis of the codices and of the archeological remains from the Valley of Mexico. Notable exceptions, the existence of which has not been demonstrated, are water from the eye and possibly the body. There is a paucity of supporting evidence for water from the breast and from an object held in the hand, although there can be no doubt that these associations occur. The data considered to this point fail to establish the rear head of the serpentine-saurian monster as a water producer, although significantly the one-headed version of this monster is closely connected with water on Dresden 74. All of the configurations are present. The array of well-established water associations is impressive, and when a design of unknown significance appears repeatedly with similar associations, a precedent exists for provisionally identifying the motif as falling water.

THE PROPOSED IDENTIFICATIONS OF WATER

ARTISTIC APPROACH TO THE IDENTIFICATIONS

It is not enough to identify a motif as falling water simply because it appears in connection with beings or objects which are known elsewhere to be associated with water. Certain other requirements should be met, and the more rigorously they are fulfilled the more impressive the identification becomes. The motif in question should resemble portrayals of water, particularly falling water, that are known to occur in the art of the same general period or region. It is necessary as a final requirement that the motif somehow convey the impression of a falling liquid. This is largely a subjective judgment, but to some extent it can be analyzed into artistic factors. The impression may, for example, be provided by an essentially columnar shape, with the vertical axis emphasized. Yet some modification of a solid, straight-sided column seems called for, in order to convey the multipartite and undulating qualities of a liquid. Interior markings, which may indicate droplets or at least suggest that the substance is composed of semi-independent entities, may help to fill this need. Or it can be achieved through a fluidity of outline—although here purely stylistic factors may falsely convey the sense that a liquid is portrayed. Splashing may be realistically shown, or subtly suggested by scrolls or other devices, as another modification of the basic columnar design. There is no set answer as to how the impression of a falling liquid may be obtained, but artistic conventions of the sort just discussed provide possibilities which, it will be seen, were utilized by the ancient Mesoamericans. If the motif combines these three types of evidence—associational, comparative, and impressionistic—the combination of factors becomes quite telling. This constitutes the artistic approach to the identifications. Additional evidence, concerning current beliefs about Mesoamerican religion, symbolism and glyphs, is discussed in Appendix A. Such data are, however, properly to be regarded as supplementary support, and the identifications should be able to stand on their own artistic merits. Methodological problems connected with the two approaches are considered in Appendix B.

NON-MAYA MURALS, SCULPTURES, AND CERAMICS

Teotihuacán-like motifs occur in the murals of Tomb 105, Monte Albán (Entry 14), suggesting the portrayal of water. Blue drops fall from the hand of a hunched-over figure who also carries a container of Teotihuacán type. A probable speechscroll rises from the mouth of this figure; it is narrower than the scroll from the mouths of the corresponding figures at Teotihuacán and gives no indication of being water. Elsewhere in the scene, in the headdress of a partially comparable figure, Von Winning's "trilobal drop element" (1947 a, p. 341) appears beneath the upper jaw of a grotesque head (cf. the Tetitla murals, Entry 5). Here, then, water would seem to be shown emerging from the mouth.

Water may stream from the corners of the mouth of a highly conventionalized sky being depicted at the top of Stela 11, Monte Albán (Entry 19, fig. 15, *d*); marked at the end with circles, the representations are in the generalized Mexican water tradition. Comparative evidence tends to support the interpretation that streams of water gush from the mouth of the sky god. On Lapida 1, a Zapotecan monument in the Museo Nacional (Caso, 1928, fig. 81), a similar but more stylized representation of the *fauces* of the sky is flanked by two scrolled designs which are edged with circles. The designs on the lapida are surely water; corresponding ones, blue in color, occasionally appear in the codices of southern Mexico (e. g. Vienna 16). Although these scrolls do not issue from the mouth, their positional association is similar to that of the motifs on Stela 11 and reinforces the belief that water is portrayed there.

The sky god on Stela 11, Monte Albán, and a being at the top of Monument C, Tres Zapotes (Entry 21, pl. 74, *c*), are similar in appearance. Each is a grotesque mask; the lower jaw is not depicted; the teeth of the upper jaw are prominent. A curling design occurs below the teeth of each, apparently representing a forked tongue. And, corresponding to the probable streams of water which issue from the corners of the mouth on Stela 11, two plain elements on Monument C extend below the sides of the mouth. These have been tentatively described by Stirling (1943, p. 18) as the halves of a broad bifurcated tongue; but, barring duplication, this possibility is disposed of by

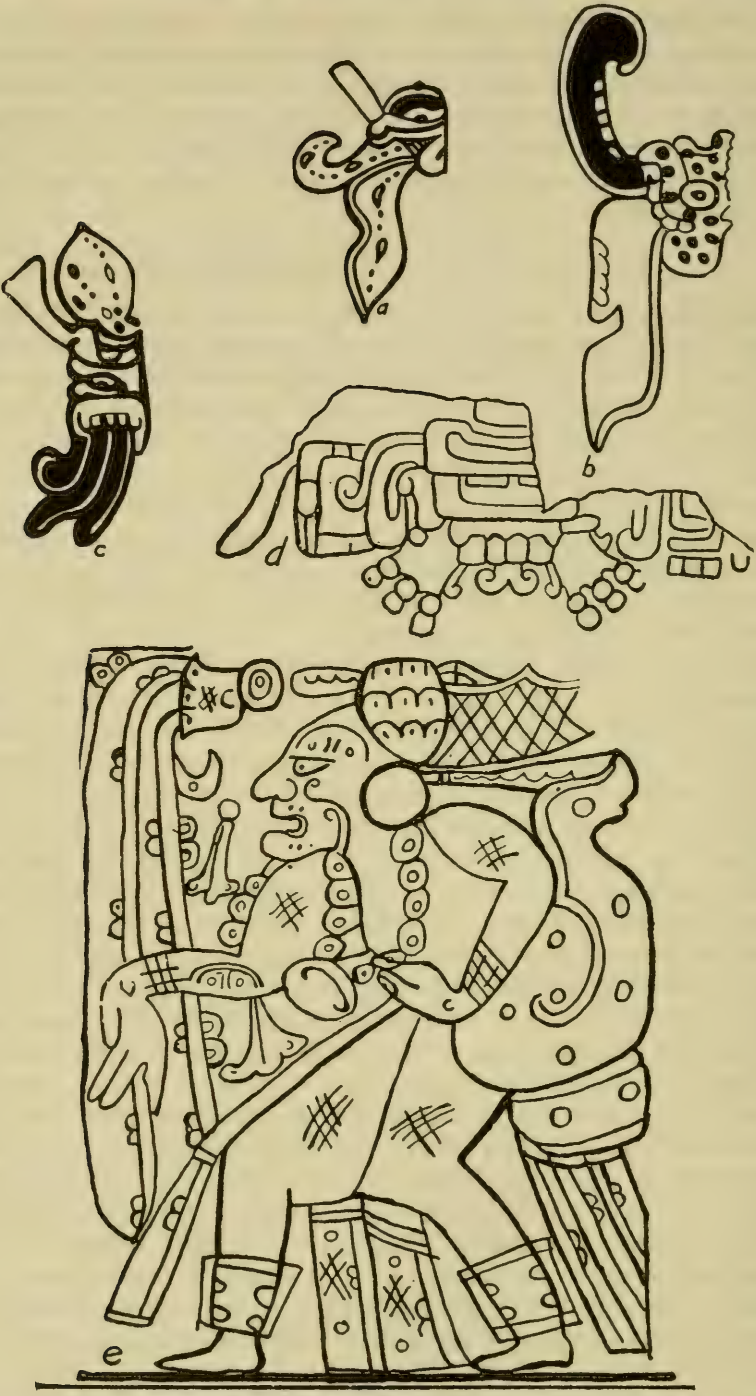

FIGURE 15.—*a–c*, La Ceiba (Entry 60). *d*, Monte Albán, Stela 11 (Entry 19). *e*, Chama (Entry 58).

the curling design previously referred to. Extending below the forked tongue appears a serrated, circle-tipped (?) design that suggests the *atl*like representation on Stela 11. In view of the other similarities between the beings on Monument C and Stela 11, and in the light of the evidence that strongly indicates water to be portrayed falling from the mouth on Stela 11, it seems probable that the corresponding designs on Monument C likewise signify water.

This supposition is supported by the occurrence on Monument C of additional designs that seem to represent water. A scrolled panel along the base of sides A and B is identified as water by Stirling (1943, pp. 18–19). Pecked out dots appear in connection with the scrolls. Larger scrolls, on sides C and D of the monument, give a subjective impression not unlike splashing waves of water, and one scroll, edged with circles, corresponds closely to scrolls depicting water in the Mexican codices and on Lapida 1, Monte Albán (Stirling, 1943, pl. 6, *c*, observer's right). On sides A and B other scrolled designs, formed by a series of raised parallel lines with marginal embellishments, have a more generally vertical position and, perhaps, portray falling water (pl. 74, *c*). In several instances these representations are associated with probable serpent heads, giving rise to the suggestion that they resemble the coils of plumed serpents (Stirling, 1943, p. 19). When associated with the serpent heads, the designs seem occasionally to contact them at the mouths rather than at the necks, as would appear more fitting if they truly depict serpent bodies. Probable tusks and tongues below the serpent mouths seem to eliminate the possibility that the scrolls in question are to be identified as flamboyant versions of these objects. Accordingly, water may also fall from the mouths in these instances. These possible streams of water sometimes contact the scrolls along the base of the monument, suggesting the descent of water upon surface water. The theme of death and destruction may also occur, for armed human figures, one clearly dressed in a warrior's costume, appear on the monument against a background of the waterlike designs. Certain of the individuals are falling head downward, recalling the figure, eye closed in death, that falls in this position in a stream of water on Madrid 32b, as well as being reminiscent of portrayals on Borgian 27, 28, 31.

Designs that seemingly portray water occur on Stela 5, Izapa (Entry 17). In appearance and concept they are strongly reminiscent of the representations on Monument C, Tres Zapotes. Stirling (1943, p. 64) identifies as water a scrolled design along the base and part way up the right-hand side of Stela 5. The row of scrolls is marked by occasional dots—less frequent but stylistically similar to those placed within the scrolls on Monument C—and at the end unites with a raised band, which continues along the base of the design. On the upper right-hand side of the stela, in virtual contact with the upper end of the scrolled band, essentially vertical lines which also seem to represent water apparently issue from the open jaws of a monster. Details are not clear, but this downward pointing-head (cf. Dresden 74) may be a multiple head attached to a U-shaped serpentine body. It appears that on both Stela 5, Izapa, and Monument C, Tres Zapotes, artistically similar water falls from serpent or monster mouths upon artistically similar water bands. The scrolled line and accompanying horizontal band which appears at the top of surface water on Laud 1 (fig. 14, *a*) offer a telling correspondence to both monuments, especially Stela 5.

A series of bands which descend from the upper jaw of an anthropomorphic figure on Stela 11, Izapa (Entry 18), may also represent water.

A water band, containing fish, occurs on Stela 1, Izapa (Entry 16, pl. 75, *a*), and here again water seems to fall upon it from above. A leaning anthropomorphic figure, described by Thompson (1941, p. 26) as seemingly "a Tlaloc, with water bag on his back, lifting a rain barrel," stands on the water. The descent of water from a container apparently occurs twice on the stela, while an object within a falling stream and, possibly, water from the mouth and eye are also present.

The figure grasps an object with clearly portrayed woven surface, probably best identified as a basket. On or within it is a conventionalized serpent. Below the basket, apparently falling in a stream of water, is a grotesque face. It has a vaguely glyphlike quality. In the probable water beneath the face are sharply curved diagonal lines and, flanking them, somewhat wider bands that terminate in upturned scrolls. The scrolls, similar in execution to those at the ends of the water band, might represent splashing water. As will be seen, a scroll of this type frequently occurs in the same position in probable representations of water in Maya sculpture.

Partially surrounded by a bewildering series of scrolls, a container with constricted neck, flaring rim, and crosshatchings occurs on the back of the figure on Stela 1. The crosshatchings may indicate decorations incised on pottery, a carrying net, or a woven basket. Flanked by straight bands, curving diagonal lines appear a short distance beneath the container. The diagonal lines correspond to those beneath the probable basket and somewhat resemble the undulating bands of surface water along the base of the stela. Could the use of diagonal lines indicate rain driven by the wind? It seems probable, in any event, that a stream of falling water is once again depicted. In this stream, perhaps balancing the grotesque head beneath the basket, a small face is faintly discernible. In profile, it wears a smug, self-satisfied expression and is placed directly above a horizontal band. Below the band appear two elements which have a generalized resemblance to outward-pointing feet or legs or to a fish tail.[15] Atop the head, a knotted headdress is ropelike or serpentine in appearance.

The scrolls which surround the container separate it from the supposed stream of water. This container, like the one carried in the figure's hands, is not inverted. However, the crosshachure, like the loosely woven design, may indicate that a basket is depicted, and in such a case a stream of water would naturally flow from it. On the other hand, the maze of scrollwork surrounding the container has an appearance not unlike piled up clouds, and it is possible that the stream indicates rain falling from the clouds rather than directly from the container. Prominent among the scrolls is a birdlike object, resting upon the container. Heavy curves may indicate its crest,[16] tail and wing, and a sunken dot its eye. This dot may, however, be a pitted erosion. Another dot, slightly raised, appears below the first and is connected with it by two slightly incised, barely perceptible parallel lines. A tear, or even actual water from the eye, may possibly be represented.

A remarkable correspondence to Goddess I, as pictured on page 74 of the Dresden Codex, exists on this Izapa stela (cf. pls. 72, 75, *a*). The goddess has the hands and feet of a jaguar, while the feet of the figure on Stela 1 represents the conventionalized heads of animals, possibly snakes. There is a grotesque, perhaps animal quality to the face of each figure. Goddess I wears a knotted snake headdress and, as has been seen, a similar headdress occurs on the small figure in one of the streams of water on Stela 1. A grotesque head forms part of a differently knotted headdress worn by the main figure on Stela 1. A scrolled object descending from the mouth of this head is quite possibly a tongue, although it could be water and if so would correspond to the water from the mouth of the knotted snake in Goddess I's headdress. A realistic representation of a snake lies across the upper arms of the figure on Stela 1. Among the most striking of the correspondences, notwithstanding the positional differences of feet and arms, is the leaning posture assumed by Goddess I and the figure on Stela 1. Water, or perhaps a blast of wind, may be indicated by a raised area in front of the mouth of the principal figure on Stela 1. Water from the figure's mouth would find no parallel with Goddess I on Dresden 74 (although cf. Madrid 32b), but it would indicate the existence of this association, which is displayed so prominently on Dresden 74.

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[15] Cf. tails of fish in the water band on Stela 1 and hanging from the sky band on Stela 5, Izapa (Stirling, 1943, pl. 52). Cf. the possible fish tail in the headdress of the principal figure on Stela 1. If outward-pointing feet are portrayed, this is their only known occurrence at Izapa.

[16] A crest, somewhat similar in appearance, appears on the bird carved on Altar 3, Izapa (Stirling, 1943, pl. 59, *a*).

Correspondences of uncertain significance also exists between the figure on Stela 1 and the black god at the bottom of Dresden 74. A serpent head, perhaps symbolic of rain, occurs at the lower end of the breechcloth of the figure on Stela 1, while the rear portions of the breechcloth of the black deity on Dresden 74 is marked with dots on a bluish-green background—in appearance a perfect counterpart of water pictured on the same page. The emergence of water from between the legs may be symbolized in both cases. A possible bird has been seen to rest on the container at the back of the figure on Stela 1, and an eagle or vulture (Tozzer and Allen, 1910, p. 335; Tozzer, 1941, p. 147) perches atop the head of the black god on Dresden 74.

Monument 2 at Cerro de las Mesas (Entry 15) and Stela C at Tres Zapotes (Entry 20) show the weeping eye motif, which may portray or symbolize water from the eye. The conventionalized face on the Tres Zapotes sculpture is that of the "Olmec" jaguar. De Borhegyi's cone-shaped effigy prongs from pre-Classic Kaminaljuyú seem to belong to the same class of portrayals (Entry 23). The effigies are identified as the Kaminaljuyú rain god, with possible relationships to the Olmec feline and "baby face" deities (De Borhegyi, 1950 b, pp. 64–65). The Kaminaljuyú figures are described as having "deeply grooved 'tear streaks' " beneath the eyes. It may be worthwhile to note that in De Borhegyi's fig. 5, *d*, the so-called goatee is indicated by parallel grooves which are virtually identical in execution to the tears and could indicate water passing beneath the tongue from the mouth. Here, however, the speculation is very much greater, and the partially corresponding designs on a number of Tlaloc effigy vessels seem more probably to arise from elaborate treatments of beards, tusks, or tongues.[17] The most which can be reasonably conjectured is a convergence wherein these objects took on certain attributes normally accorded water.

MAYA MURALS, SCULPTURES, AND CERAMICS

GENERAL CONSIDERATIONS

The search for water on the Maya monuments meets certain initial handicaps but is not without its compensatory aspects, as well. Methodological problems are discussed in Appendix B, but two special factors merit attention here. (1) Partly because of its blue or green color, water is easily identified in the Maya codices, but the aid of color is lacking on sculptures which have long been exposed to the elements.

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[17] Cf. De Borhegyi, 1950 a, fig. 1, *a*, as just one of a sizable number of examples.

The colors blue and green, furthermore, were largely outside the working tradition of the Maya potters,[18] and it seems probable that representations of water on polychrome ceramics would therefore be executed in one of the colors prescribed by the craftsman's art. Blue and green do occur prominently in mural art. Representations in these colors which might indicate water are, apparently, unknown. (2) Although the search for water is systematized along different lines, an initial idea as to what to look for was provided by the pioneer work of Spinden. His recognition of four pendant designs at Quirigua, Palenque, and Yaxchilan as floods of descending water comparable to that on Dresden 74 was basic (Spinden, 1913, pp. 66–68), and he has also made important references to "flood symbols" at Piedras Negras (Spinden, 1928 b, pp. 23, 29, 30). Accordingly, credit for the original identifications belongs to Spinden. However, he did not develop the case systematically, and it has remained in the realms of impressionism and intuitive judgment.

Interrelationships of various representations identified as water in Maya art are given in figure 16. By means of certain conventionalizations, an attempt is made to visualize the more important artistic and conceptual relationships. By referring to this chart in connection with the text, one may more readily grasp the logic behind the identifications. The necessity of keeping the chart reasonably simple and intelligible imposes practical limitations, preventing the inclusion of a great deal of supporting evidence. The conventionalizations employed are explained in Appendix D, "Notes on Figure 16" (pp. 384–386).

Established portrayals of water in Mexico as well as in the Maya codices are held to provide precedents upon which designs in Maya art are to be identified as water (fig. 16). It is true that this crossing of spatial cultural boundaries weakens the argument somewhat. Nevertheless, the recognition that figures at Teotihuacán sprinkle water from the hand establishes the presence of this association on a comparatively early archeological horizon, and it is increasingly realized that within Mesoamerica the primary cultural changes took place along chronological rather than areal lines. The occurrence of specific assemblages of Teotihuacán traits at Kaminaljuyú, and of Teotihuacanoid ceramic features such as cylindrical tripods in the Peten, should be borne in mind in this connection.

The Mexican portrayals of water which are of particular importance in establishing precedents are those at Teotihuacán (the fringing of water with flowers, water from a bird beak, water from the hand, and—not explicitly shown in fig. 16—water from a Tlaloc mouth); in Aztec sculpture (Entry 1) and Laud 1 (water that falls from a container

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[18] Due in part, perhaps, to the difficulties in finding pigments of these colors which would withstand firing?

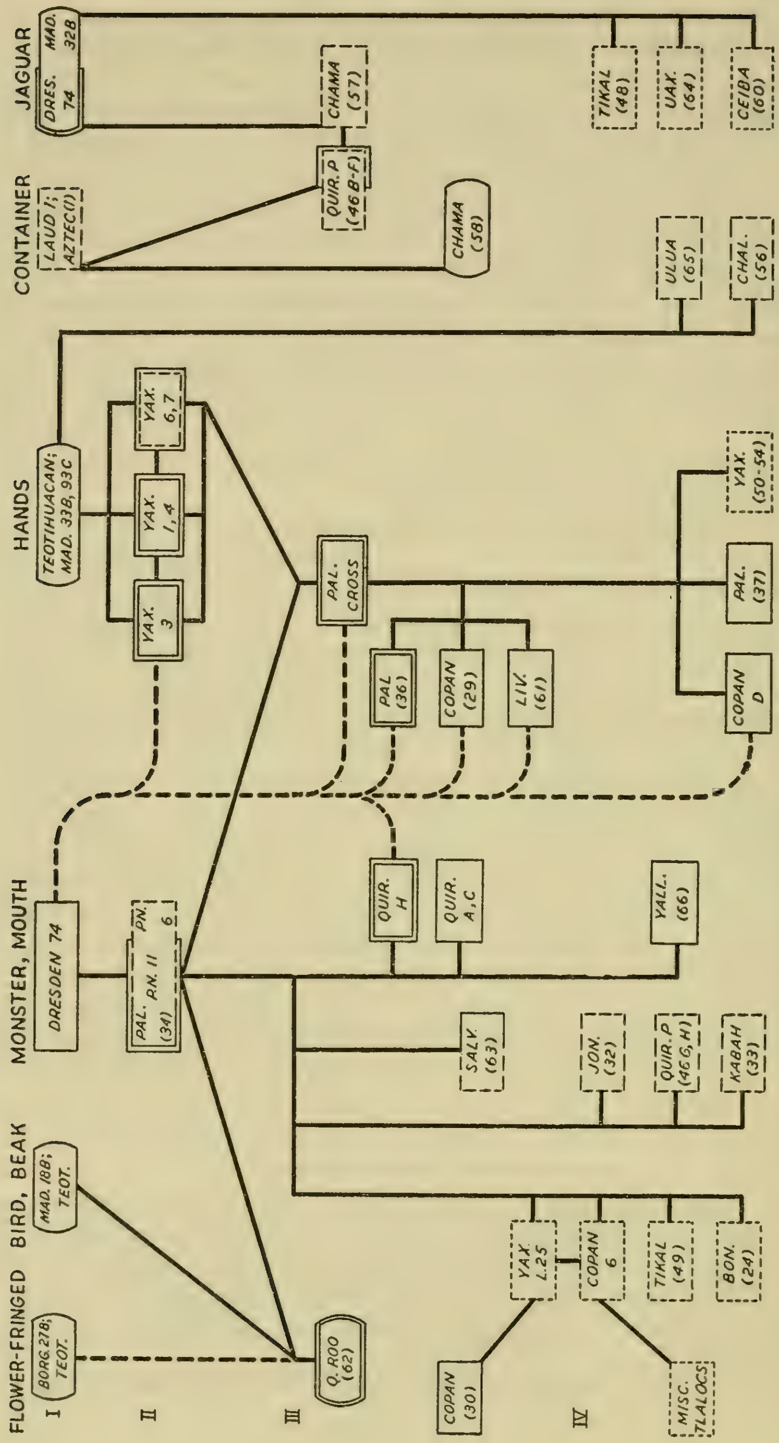
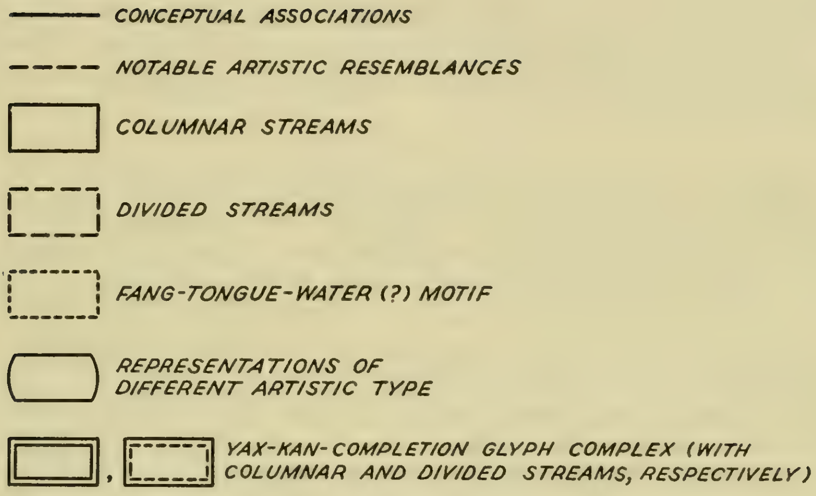

FLOWER-FRINGED
BIRD, BEAK
MONSTER, MOUTH
HANDS
CONTAINER
JAGUAR
I
II
III
IV
BORG. 27B; TEOT.
MAD. 18B; TEOT.
DRESDEN 74
TEOTIHUACAN; MAD. 33B, 93C
LAUD I; AZTEC(?)
DRES. 74
MAD. 32B
PAL. P.N. 11 (34)
P.N. 6
YAX. 3
YAX. 1,4
YAX. 6,7
QUIR. P (46 B-F)
CHAMA (57)
Q. ROO (62)
PAL. CROSS
CHAMA (58)
QUIR. H
QUIR. A,C
PAL (36)
COPAN (29)
LIV. (61)
TIKAL (48)
UAX. (64)
CEIBA (60)
ULUA (65)
CHAL. (56)
YAX. (50-54)
PAL. (37)
COPAN D
YALL. (66)
SALV. (63)
JON. (32)
QUIR. P (46 G, H)
KABAH (33)
COPAN (30)
YAX. L. 25
COPAN 6
TIKAL (49)
BON. (24)
MISC. TLALOCS

Figure 16.—Interrelationship of representations. (See Appendix D, "Notes on Figure 16.")
(See key on opposite page)


CONCEPTUAL ASSOCIATIONS
NOTABLE ARTISTIC RESEMBLANCES
COLUMNAR STREAMS
DIVIDED STREAMS
FANG-TONGUE-WATER (?) MOTIF
REPRESENTATIONS OF DIFFERENT ARTISTIC TYPE
YAX-KAN-COMPLETION GLYPH COMPLEX (WITH COLUMNAR AND DIVIDED STREAMS, RESPECTIVELY)

Key to figure 16.

and divides into semidistinct streams); and on Borgian 27, 28 (again the fringing of falling water with flowers). Actually, certain of the identifications receive additional support from comparable although less frequent portrayals in the Maya codices (water from the "hand" on Madrid 33b and from the beak of a bird on Madrid 18b). Such occurrences, both in the early Classic at Teotihuacán and the late Maya codices, indicate that the associations in question had a respectable time depth in Mesoamerican religion, and were sufficiently deep-rooted to survive over the centuries. However, no Mayan or Mexican codex portrayals are known to show water from Tlaloc's mouth, and to this extent the latter association must be deemed a less virile one in Mesoamerican religion, with correspondingly less likelihood of being indicated by designs of unknown meaning which are associated with Tlaloc mouths.

HIGHEST PROBABILITY (A) [19]

Although great, the role of Mexican portrayals in providing precedent for the identifications in Maya art should not be overstressed. The most important single source of support, Mayan or Mexican, is the scene on page 74 of the Dresden Codex (pl. 72). It is cosmopolitan in the associations it depicts and, even more important, the portrayal of the stream from the sky monster's mouth is highly characteristic in execution.[20] It is of great significance, therefore, when closely comparable designs are found elsewhere in Maya art. If only chance factors were involved, it is impossible to estimate the odds against the repeated occurrence of this type of design with the mouth, but they are surely large. However, approximately 60 percent of the known examples do occur with the mouth,[21] and with a single exception (Entry 36) the other known examples occur with the hand (directly or in intimate though indirect association). Although the sample is small, this surely adds up to the conclusions that the design was not employed randomly and that, accordingly, it had some connotative value consistent with its usage on Dresden 74 (water) and also consistent with objects which might be associated with the hand (among which, on the strength of the Teotihuacán murals, water must be included). This is an incomplete statement of the case, however, for other lines of evidence offer powerful support.

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[19] With one or two exceptions, this section includes discussion of all the representations in Classic Maya art which seem to have the greatest possibility of depicting falling water. Less likely designs are labeled "Probability B." In a few instances, plus signs are added to the tabulated entries of the B category. See Appendix C, "Notes on the Tables."

[20] Elsewhere in the Dresden Codex, the same artistic treatment of water occurs only on pages 43b, 67a, 73.

[21] The sample is small, lessening the effectiveness of this type of reasoning. The percentage, as given above, is based on 8 designs, 5 of which emerge from the mouth. This association may or may not hold true for a ninth example, the resulting range in percentage being from 56 to 67. These 9 examples occur at five different sites. The wide distribution would seem to increase the validity of the sample, as it tends somewhat to rule out the possibility that slavish imitation, without regard for basic concepts, had taken hold of the artists. If the search is sufficiently widened to include the generally similar art forms which, like the examples just discussed, are columnar in shape (table 4), the sample is increased (22 to 27). Of these 11 to 14, approximately one-half, emerge from the mouth, while with only two exceptions the remainder are associated with either the hand or head.

Not only the water from the monster's mouth on Dresden 74 but the monster itself is highly distinctive. It is easy, therefore, to recognize closely corresponding artistic forms and legitimate to identify them as the same mythological creature (i. e., they embody much the same set of concepts). It is possible, accordingly, to recognize counterparts of the Dresden 74 monster at Palenque, in House E (Entry 34, fig. 17, *a*) and at Piedras Negras, on Stelae 6, 11, 14 (Entries 40–42, fig. 17, *b*, *c*, *d*) and 25.[22] As on Dresden 74, the body of each monster is a band of astronomical symbols; the front leg dangles similarly, and the hoof is cloven. The front head is crocodilian or serpentine in appearance, and it is downward pointing. Unlike Dresden 74, where the monster is single headed, each of the Piedras Negras and Palenque monsters has an inverted head, recalling that of the Long-nosed God, as a rear head, and a bird may be placed at the center of its body.[23] The rear head is shown with a fleshless, bearded lower jaw, and the forehead, too, tends to be fleshless. A distinctive triple symbol of shell, "leaflike" object, and Saint Andrew's cross (Spinden, 1913, p. 53) appears at the skullcap. The rear leg dangles in a way reminiscent of the front one.

In view of the other striking correspondences that exist, the presence of flamboyant, generally columnar designs below the mouths of the front heads of most of these monsters would seem to be anything but fortuitous. Such designs occur on Dresden 74, House E in Palenque, and Stelae 6, 11, and perhaps 14, at Piedras Negras. The precedent of Dresden 74 indicates that the other designs are also water. They meet the artistic requirements of the present study with some success. The impression of a falling liquid is sufficiently conveyed (compare the

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[22] Generally comparable monsters are of frequent occurrence in Maya art. The Dresden-Palenque-Piedras Negras monsters do form somewhat of a group, however, as opposed to the manifestations of the beings usually encountered in Classic art. The immediate significance of this is that it underscores the specific identity of the monsters under discussion. It is not without additional interest, however, that monsters from the Usumacinta tend, in various features connected with the body, head and legs, to resemble those in the Dresden (and also the Paris) codices more closely than they do their counterparts in the Peten and the Motagua. (See Maler, 1901, pl. 26, No. 2, and Thompson, 1939, fig. 4, *d*, for additional close correspondences in the treatment of the dragon; also Maler, 1903, pl. 69, at the upper Usumacinta site of Yaxchilan.)

[23] According to Spinden (1917, p. 171), the body of the two-headed monster is vertical on the Piedras Negras stelae. The body he considers to be formed by astronomical hands which rise on either side of a seated figure and join above its head. Supporting his view is the presence of a Serpent Bird atop the band as it passes over the figure's head (cf. the similar monster in House E, Palenque). This is not borne out by the appearance of the designs, however. The vertical bands terminate abruptly a sizable distance above the monster's heads, while portions of the horizontal body can be seen beneath an overlay of objects which rise from below. The horizontal band bears astronomical markings. Actually, the question of whether the bodies are horizontal or vertical is somewhat academic, as the concept of a sky monster is surely present in both types of bands. Viewed realistically, the representations on the Piedras Negras stelae may represent throne decorations rather than actual sky monsters. The point being made—important inasmuch as it emphasizes the resemblances to the sky monsters on Dresden 74 and in House E, Palenque—is that whatever else may have been intended or implied, the concept of a horizontal body of sky symbols was also present in the Piedras Negras type of monster.

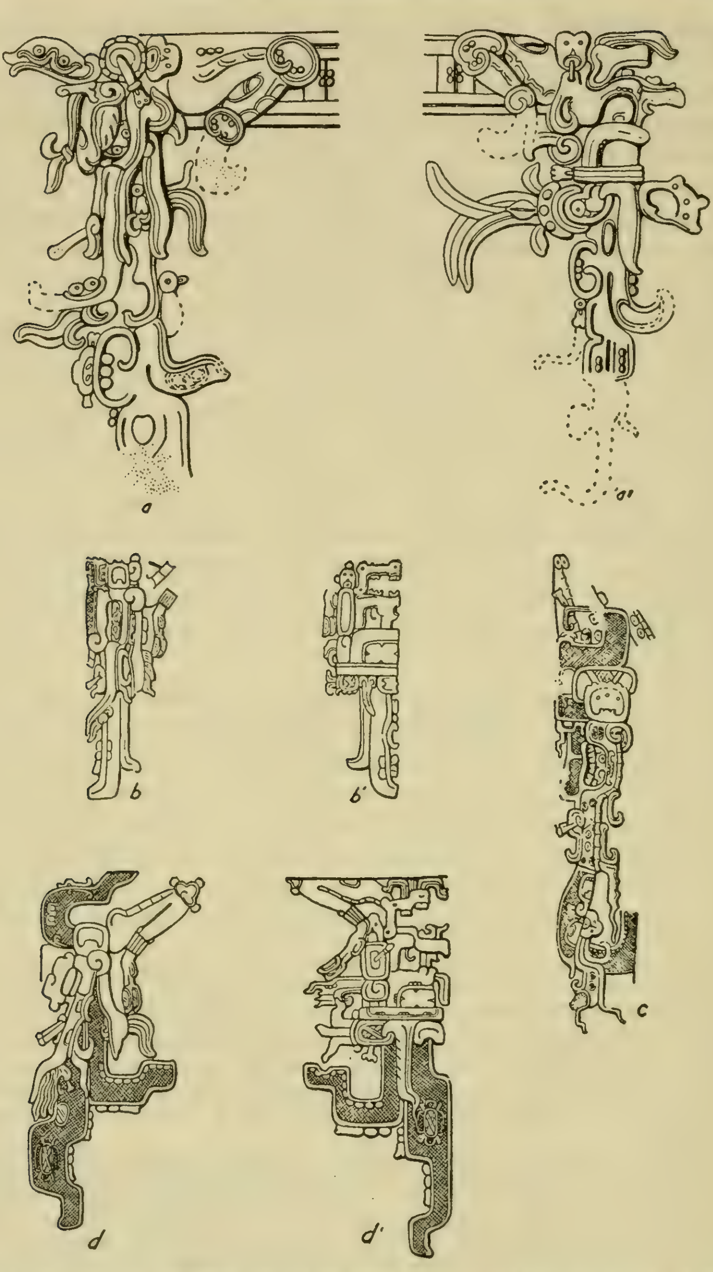

Figure 17.—*a*, Palenque, House E (Entry 34, front head). *a'*, same, rear head. *b*, Piedras Negras, Stela 6 (Entry 40, front head). *b'*, same, rear head. *c*, Piedras Negras, Stela 14, (Entry 42, front head). *d*, Piedras Negras, Stela 11 (Entry 41, front head). *d'*, same, rear head.

sections, "Artistic Approach to the Identifications" and "Artistic Typology and Miscellany"). Especially at Piedras Negras, it is true, the outlines do not closely resemble that of water on Dresden 74. But Mexican examples showing the descent of water in dividing streams (pl. 74, *b*, fig. 14, *a*) offer analogies to the shape of the design on Stela 11, Piedras Negras (fig. 17, *d*).

Artistic connections of an indirect but telling sort nevertheless exist between the designs emerging from the mouths of the Palenque-Piedras Negras sky monsters and the water from the mouth of the monster on Dresden 74. To understand this, it is necessary to look to the inverted rear head of the dragon. From its skullcap or triple symbol there descends, in every instance, a design which is virtually identical to that which issues from the mouth of the front head (fig. 17, *a′*, *b′*, *d′*). The fact that it is so similar suggests that the same object is intended, viz, a stream of falling water. Nevertheless, a precedent for such an identification has not been found among the established representations of Mayan or Mexican water. The problem of identification is accordingly difficult, and detailed discussion of it is postponed until the section, "Balanced Water and Vegetation." The artistic identity of the designs from the skullcap of the rear head and the mouth of the front head must, in any case, be recognized, and the fact that the two heads occur on the same body constitutes an important conceptual linkage.

A head identical to that of the rear head of the monster is sometimes depicted, unattached to a body. The triple symbol is an important diagnostic. Sometimes the head is inverted, corresponding to the rear heads of the Palenque and Piedras Negras sky monsters. Sometimes it is upright (cf. Spinden, 1913, figs. 52, 83). Within the Temples of the Cross and the Sun at Palenque, both the inverted and the upright detached heads appear, either in different sculptured panels or in different parts of the same tablet. A manifestation of the dragon with its front and rear heads is indicated in such examples, the upright anthropomorphic head balancing the inverted one and thereby substituting for the usual serpentine front head.

This brings us to one of the most important steps in the development of the argument for the portrayal of water in Classic Maya art. Columnar designs fall from the detached, inverted heads, corresponding to generally similar art forms that descend from the sky monster's rear head (cf. figs. 17, *a′*, *b′*, *d′*, 18, *b*). Similar designs fall from the mouth of the detached upright heads. Thus, Long-nosed-God-like heads seem to substitute for the serpentine heads in the belching forth of water (cf. figs. 17, *a*, *b*, *d*; 18, *a*, *c*). The conclusion that it is water which passes from the mouth is strongly reinforced by the fact that in figure 18, *a*, *c*, the columnar designs are strikingly similar to the water which descends from the mouth of the sky monster on Dresden 74 (cf. pl. 72). An analysis of these correspondences is made in a subsequent section, "Artistic Typology and Miscellany." It follows from all this that the detached heads derive their associational precedent for water from Dresden 74, via the complete sky monsters at Piedras Negras and Palenque. But the latter, in turn, derive additional support from Dresden 74, via the detached monster heads at Palenque.

The detached monster heads, from whose skullcaps and mouths water may be falling, are typically held in the hands of human figures. In figure 18, *a*, it will be seen that the hands are in even more intimate contact with the object from the mouth than with the head itself. Perhaps they may be thought of as an actual source of the water, in which case, by the process of duplication, the artist showed dual sources for the falling stream—hands as well as mouth. This is speculative, although some support may be derived from partially comparable representations at Copán (Entry 29, pl. 76, *b*, *c*) and Livingstone, Guatemala (Entry 61, fig. 18, *e*). In the Copán specimens, the hand is identically placed in relation to the head and "water." Even making no allowances for portrayal in the round instead of two dimensionally, the object from the mouth recalls water from the monster's jaws on Dresden 74 in a tantalizing yet insistent fashion. However, the head lacks a triple symbol and the nose differs from that of the typical rear head of the sky monster. It is not clear, in the Livingstone representation, if a head and mouth is portrayed at the upper end of the waterlike design. A human hand is clearly contacting the "water." [23a] Artistically, the design, again, has close parallels with Dresden 74 and the Temple of the Cross, Palenque. Because they too hark back to the established portrayal of water in the Dresden Codex, the objects from Copán and Livingstone serve to reinforce the association of figure 18, *a*, *b* (Palenque) with the hand. This is to say that because there are several examples of the combined association of the hand with the "water" as well as head, the motif must have been an intentional one rather than resulting fortuitously from carelessness or whim on the part of the individual artist (cf. footnote 21).

A series of columnar designs in the same general artistic tradition, which often fail, however, to display specific resemblances to water on Dresden 74, occur at Yaxchilan (Stelae 1, 3, 4, 6, 7; Entries 50–54; figs. 18, *d*, 19, *a–c*). Closest to the water on Dresden 74 is the design on Stela 3 (fig. 18, *d*). The dividing water shown in figures 14, *a*,

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[23a] "The figure holds something in his hand, which may perhaps represent a face or an open jaw, and from which a chain of curling, but pointed, designs runs downward like a stream" (Seler in Thompson and Richardson, 1939, vol. 3, p. 127). Seler also notes the possible association of a Muluc (water) element with this design.

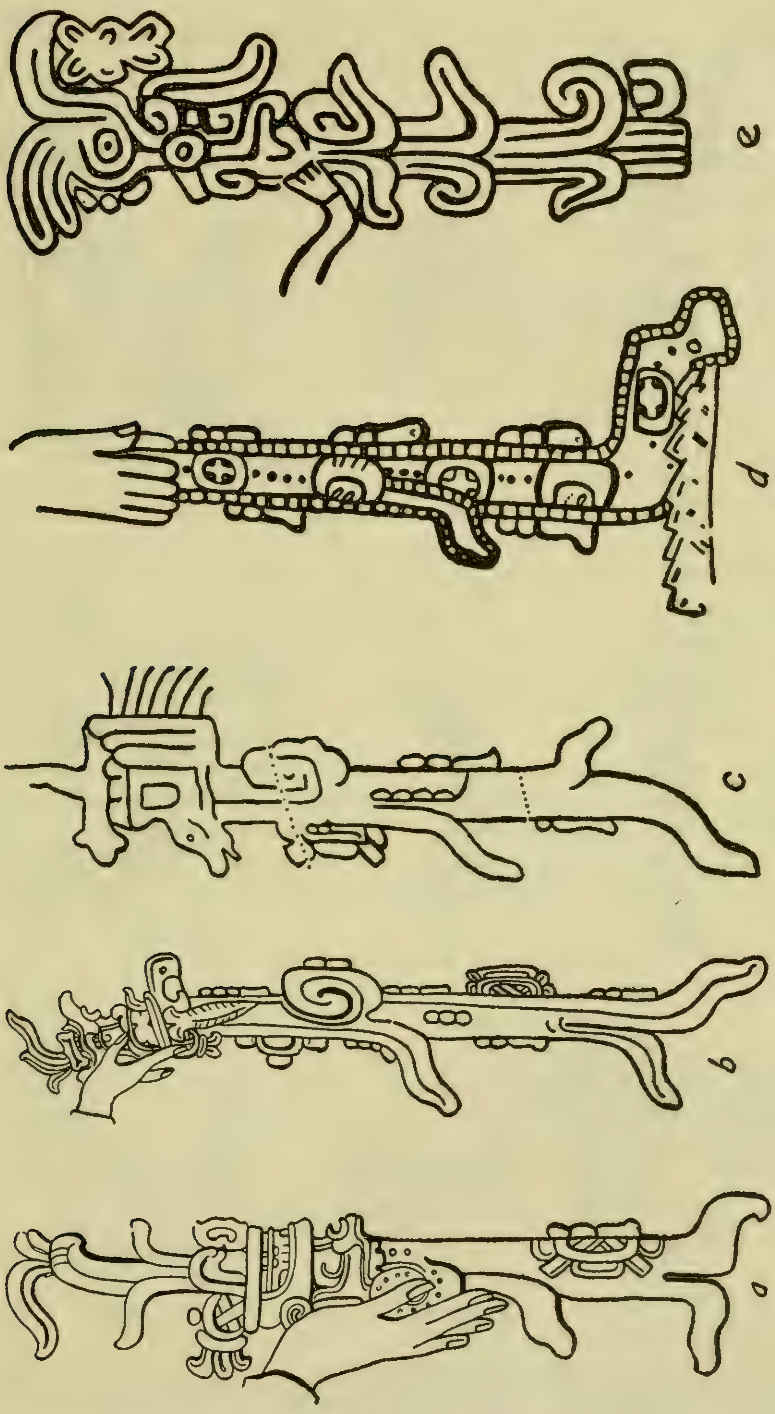

FIGURE 18.—*a*, *b*, Palenque, Temple of the Cross (Entry 35). *c*, Palenque, Temple of the Sun (Entry 36). *d*, Yaxchilian, Stela 3 (Entry 51). *e*, Livingstone (reported provenience) (Entry 61).

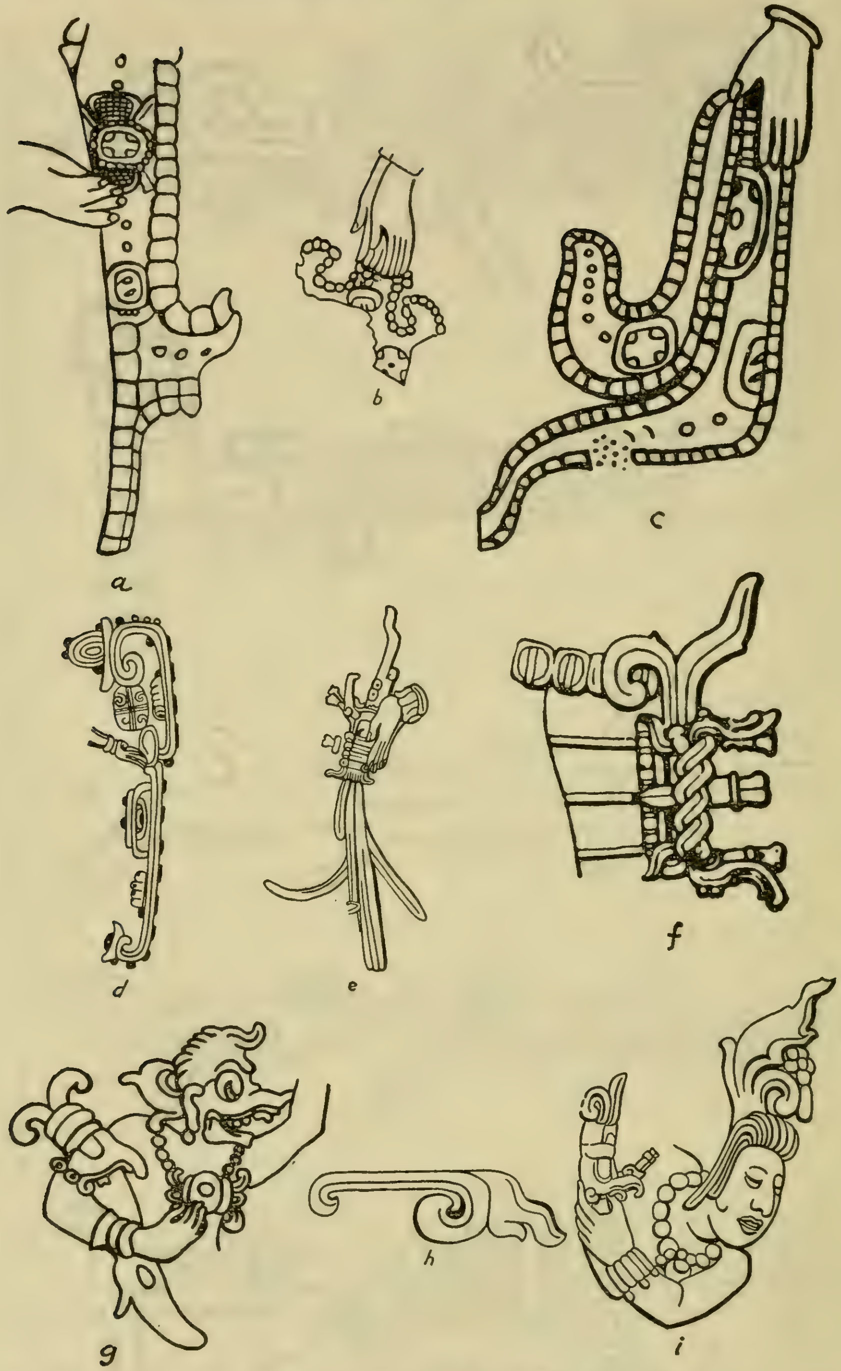

FIGURE 19.—*a*, Yaxchilan, Stela 4 (Entry 52). *b*, Yaxchilan, Stela 7 (Entry 54). *c*, Yaxchilan, Stela 6 (Entry 53). *d*, Ulua Valley (Entry 65). *e*, Palenque, Temple of the Foliated Cross (Entry 37). *f*, Yaxchilan, Stela 1 (Entry 50). *g*, Copán, Stela D, (Entry 26). *h*, Tikal, Temple IV. *i*, Copán, Stela H, (Entry 27).

and 17, *d*, is strongly recalled on Stelae 6 and 7 (figs. 19, *b*, *c*). The Yaxchilan designs are of importance here because they fall from human hands held in much the same position as the hands in the previously discussed representations at Palenque and Copán (figs. 18, *a*, *b*; pl. 76, *b*, *c*). No heads appear at the top of these portrayals, however. Teotihuacán and perhaps Madrid 33b, 93c provide precedent for the associations of the hand per se with water.

Waterlike designs descend from the mouths of additional double-headed monsters. Examples at Quirigua take the form of Ceremonial Bars, clearly paraphernalia but apparently treated so as to emphasize the underlying concept rather than mere ornamentation (Stelae A, C, H; Entries 43–45; fig. 20, *a–c*). Front and rear heads are not differentiated in these portrayals, waterlike designs seeming to fall from the mouths of each head. Serpent heads appear on Stelae A and H. Jaguar heads occur on Stela C, according to Maudslay (1889–1902, vol. 2, p. 9), but the absence of spots together with a vaguely atypical aspect suggest the possibility that some rodent may, instead, be portrayed. The Long-nosed God, armed with lance and shield, sits at the top of the "water" on Stela H. He is apparently within the stream, recalling the numerous associations of symbols of war with falling water (Dresden 74, Madrid 32a, Borgian 27). The design below the god is more strongly reminiscent of water pictured on Dresden 74 than is true of Stelae A and C. Lacking the specific attributes of the Dresden 74 sky monster, these double-headed creatures of Quirigua have less claim to the precedent for the portrayal of water than was found to be true at Palenque and Piedras Negras. On the other hand, the resemblance of figure 20, *c*, to the water from the monster's mouth on Dresden 74 constitutes a tantalizing supporting link.

The emptying of a container is the most frequent of the water associations in the codices. Goddess I, the water pourer on Dresden 67a, 74, has strong feline features. Hence, it is of great interest, in polychrome ceramic art from Chama, to find a jaguar pouring liquid from a jar (Entry 57, fig. 21, *c*). The huge cat wears the collar of the death god, perhaps relating the scene to the death and destruction configuration. The design from the vessel divides into scrolling branches (cf. known water in pl. 74, *b*, fig. 14, *a*).

On Zoomorph P, Quirigua, the same branching treatment characterizes another set of designs that appear to be emptied out of inverted containers (Entry 46b–f, figs. 21, *a*, *b*, 22). Rims are clearly visible except in a single instance, where the container seems to be depicted with its bottom upturned, as if seen from above (fig. 21, *a*). This is the "cartouche" illustrated by Maudslay (1889–1902, vol. 2, p. 18). The anthropomorphic figures holding the vessels are mostly

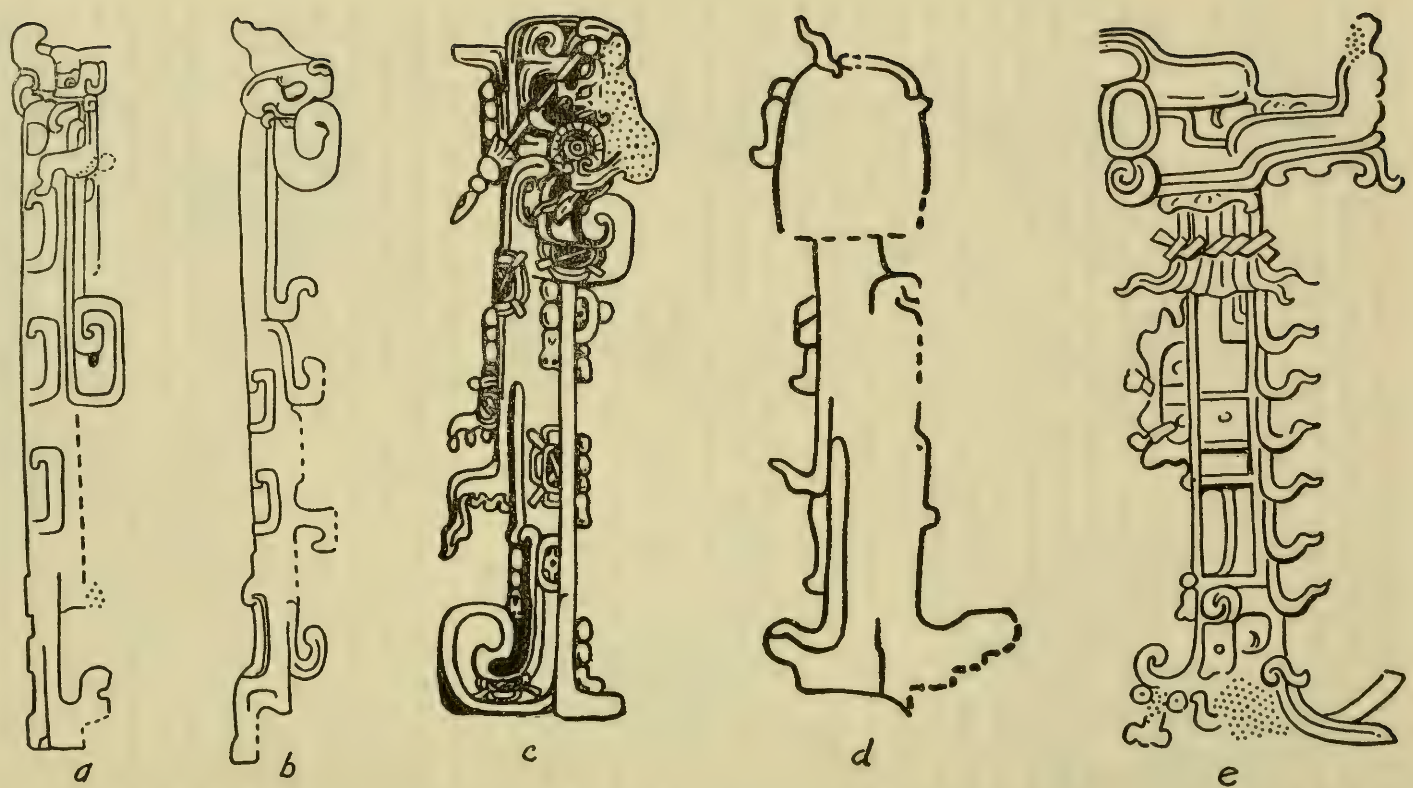

Figure 20.—*a*, Quirigua, Stela A (Entry 43). *b*, Quirigua, Stela C (Entry 44). *c*, Quirigua, Stela H (Entry 45). *d*, Finca Encanto (Entry 31). *e*, Yalloch (Entry 66).

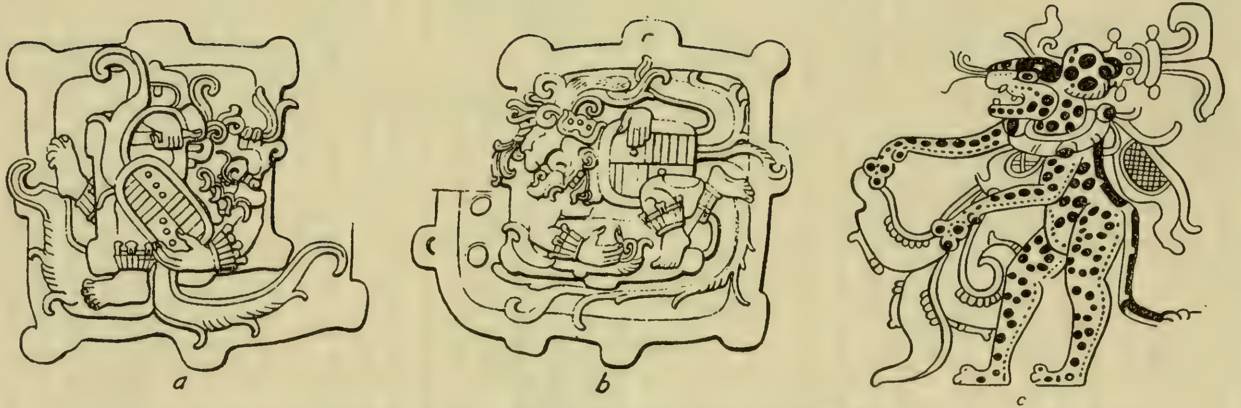

FIGURE 21.—*a*, Quirigua, Zoomorph P (Entry 46b). *b*, Quirigua, Zoomorph P (Entry 46c). *c*, Chama (Entry 57).

grotesque variants of the Long-nosed God. One of them seems, however, to be the same rodentlike (or unspotted feline?) animal met on Stela C, Quirigua, with a probable stream of water descending from its mouth (cf. figs. 20, *b*, 22, *b*). The occurrence at the site of the same animal in different settings, both of which seem, however, to be aquatic, is of no small interest. It constitutes an independent evidence that the same concept is involved. Almost all of these figures on Zoomorph P, animal and grotesque, are hunched over their containers. The configuration of the bending-over rainmaker is recalled (Dresden 67a, 74, Laud 1). One of these crouching postures (fig. 22, *b*) is particularly close to that of God B in the water-pouring act on Madrid 13b. The horizontal portion of two of the figures suggest that they are in the air, looking down at the earth (fig. 22, *a*, *b*), while the legs of one of the otherwise upright beings seem to be floating behind it rather than standing and supporting its body (fig. 22, *c*). The mien of celestial beings, pouring down the rainwaters from the sky, is forcefully captured.

A bending figure shown on Chama pottery appears in connection with a design believed by Dieseldorff (1926–33, vol. 1, p. 27) to indicate rain (Entry 58, fig. 15, *e*). A wavy line, which may with confidence be identified as water, is depicted at the top of a curious composite object. Apparently a water container, formed of a mollusk shell with an artificial extension, is indicated. It seems to be attached to the back of an aged personage (God N) whose stooped shoulders support it. Slanting lines, marked with dots, appear beneath the spire of the shell. This is not the characteristic portrayal of water as it is recognized on the Maya monuments, but it has close analogies to the typical representations of rain in the Dresden Codex. Perhaps rain is depicted, falling from the bottom of the water container which the figure wears on its back. Compare the possible emergence of water from the spires of mollusk shells at Teotihuacán (Entry 2).

Markings akin to those beneath the spire of the mollusk shell appear between the legs of the figure on the Chama vessel (fig. 15, *e*). This presumed existence of a breechcloth with waterlike markings is reminiscent of the back portion of the black god's breechcloth on Dresden 74 (pl. 72). Water may be symbolized or, perhaps, actually depicted. An elongated design in front of the figure is similar in appearance. It seems to emerge from a small object which could indicate a cloud (cf. Dresden 35c and Förstemann, 1906, p. 173). A cloud, if such it be, may reappear as the source for a stream of water on a tablet at Finca Encanto, Chiapas (Entry 31, fig. 20, *d*). This design is of particular interest because of its close artistic correspondence to probable water from the mouth of the serpent on Stela H, Quirigua (fig. 20, *c*).

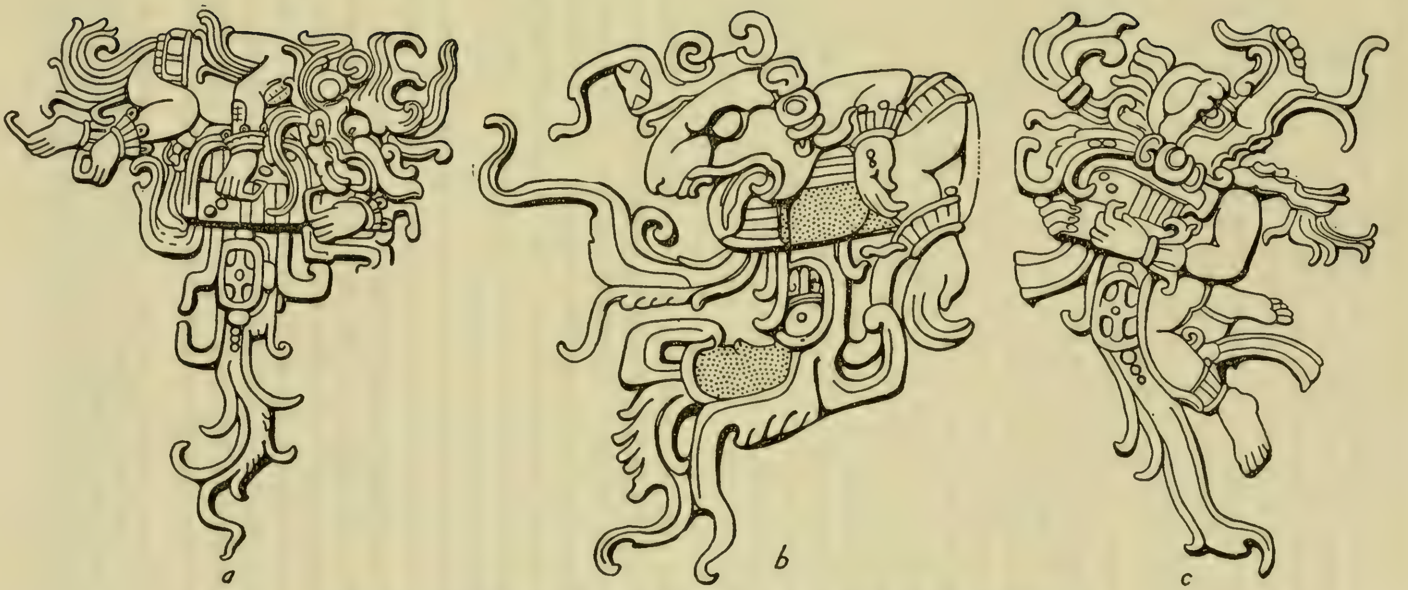

FIGURE 22.—Quirigua, Zoomorph P. *a*, Entry 46d. *b*, Entry 46e. *c*, Entry 46f.

Remarkable correspondences to the Mexican portrayal of water exist on a polychrome plate from Quintana Roo (Entry 62, pl. 76, *a*). At widely spaced intervals the essentially columnar design is edged with fleur-de-lis-like elements, probably to be identified as flowers although highly conventionalized bones could be intended. This marking is duplicated on streams of water in the Borgian Codex (pl. 73, *b*, center). In conjunction with the faintly scalloped or serrated edges of the design, it nicely conveys the impression of falling water. Dots and circles appear frequently within the design (cf. certain portrayals of water at Teotihuacán in this respect, as well as in the apparent fringing of the design with flowers). Various objects seem to be falling in the water. The stream itself emerges from the beak of a bird (cf. Madrid 18b and Entries 8, 11, 13, Teotihuacán). Realistically treated, the bird head is clearly the counterpart of the serpentine or saurian head of the Maya sky monster.[24] The descent of water from the mouth of this monster is vividly recalled.

A final trait, shared by a number of the representations that have been discussed, seems to constitute a "clincher" for the argument that water is portrayed. The day sign Eb and a shell, the latter perhaps retaining its value in the codices of zero or completion, appear in water poured from a jar by Goddess I on Dresden 74. Other glyphs or symbols also occur in water in the Maya and Mexican codices and at Teotihuacán although such associations are very rare. The apparent sign of completion on Dresden 74 is of particular importance here. For it is one of three glyphs which occur repeatedly in the waterlike designs in Classic Maya art. The other two, yax (green) and kan (yellow), sometimes appear side by side or in conjunction with the completion sign. The day signs Ahau and Akbal may occur once or twice, although Eb is unknown. The occurrences of specific glyphs are given in table 5.

Examination of the table shows how the glyphs bind the supposed portrayals of water into a more closely knit complex, enhancing the likelihood that a single concept is involved. Completion (zero), yax and possibly Ahau appear in the waterlike streams associated with different examples of the double-headed sky monster. Only completion occurs with the detached heads of the monster. Completion, then, is the glyph that dominates these important representations at Palenque and Piedras Negras, so the two probable occurrences of yax with the sky monster are of considerable importance (Entry 34, fig.

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[24] The bird head is linked with the top of the head of a second, anthropomorphized bird. As is so frequently the case when the sky monster is involved, the head at the observer's left is the "front" one, treated virtually without human features, while the rear head, at the observer's right, is given strongly human attributes. Another Maya pattern in regard to the double-headed monster is followed inasmuch as the anthropomorphic rear head is placed at a lower level than the less humanized front one (cf. pl. 75, *b*; Maler, 1908, pls. 8, 10, No. 2; Maudslay, 1889–1902, vol. 2, pls. 81, 82).

17, *a*).[25] In the somewhat comparable design from a serpentine mouth at Quirigua, the kan sign occurs as well as completion (Entry 45, fig. 20, *c*). It is kan and yax that appear together repeatedly in streams falling from the hands at Yaxchilan. Kan and the day sign Ahau or Akbal appear in the streams poured from containers at Quirigua. Once again kan is present in the stream that is treated in the specific artistic tradition of water in the Borgian Codex and gushes from the mouth of the bird which substitutes for the front head of the sky monster (Entry 62, pl. 76, *a*).

All this may be viewed in a slightly different way. Completion (zero) dominates the portrayals in the west, at Palenque and Piedras Negras, although at the Usumacinta site of Yaxchilan kan and yax may occur exclusively. Kan takes over as one moves farther to the east (Quirigua and, if this is the place of manufacture, the vessel reported from Quintana Roo). It would be interesting to know if a larger sample would substantiate this geographic patterning. As will be seen shortly, there are reasons for believing that at Palenque kan as well as yax shared the aquatic associations with completion. Yax may also have an aquatic association at Tikal. The most that seems to be indicated is a regional favoring of one glyph over another with, so far as can be determined at present, any one of these three symbols being a potential substitute for the others.

PROBABILITY B: PARAPHERNALIA AND SECONDARY ASSOCIATIONS

Certain representations that give some evidence of relationship with the Maya motifs discussed heretofore are, nonetheless, somewhat less convincing as water. Some of them could symbolize water without actually portraying it. Others are so highly stylized as to suggest that their function was almost solely a decorative one. Whatever conceptual ideas lay behind the latter group seem to have been largely repressed. True, conventionalization might also have taken place if the object in question represents some type of ritual paraphernalia. In many of these highly stylized examples, however, there is no reason to assume that the object is intended as paraphernalia laden with symbolic meaning, rather than a decoration which, perhaps through convergence, reflects only palely artistic and conceptual attributes of water. This is not to deny that some of the designs discussed previously may actually depict paraphernalia, too; but if this is the case, the artists were careful to show the waterlike aspects of the ceremonial objects, and the aquatic symbolism was consequently more pronounced.

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[25] Maudslay's restoration of the two diagonal parallel lines, not visible in the photograph of the Palenque sky monster, is presumably safe (cf. Maudslay, 1889–1902, vol. 4, pls. 42, 43). At least one of the diagonal lines characteristic of yax appears clearly in the stream from the mouth of a dragon at Piedras Negras (Stela 11, Entry 41); Spinden's drawing, which is reproduced here without change, treats the glyph as doubtful, however. (Cf. fig. 17, *d*, and Maler, 1901, pl. 20, No. 1.) Entry 41 is of particular interest because it indicates a specific association of completion and yax.

Possible examples of ceremonial or decorative objects which retain something in the way of aquatic symbolism relate to detached Long-nosed God or sky-monster heads. Such an object appears on Stela D, Copán (Entry 26, fig. 19, *g*). It is by now a familiar one, a Long-nosed God head without a lower jaw appearing at the top and the remainder of the object below the god's mouth, resembling water from the jaws of the Dresden 74 monster. Held casually in the arm of a figure of the Long-nosed God, however, it clearly appears to be a stafflike object. The representation is reminiscent of the Tlalocs on Borgian 27, 28, and Seldon 9, inasmuch as a deity that is often considered to be the rain god (Appendix A) holds an effigy head, representing himself, from which water seems to descend (cf. pl. 73, *b*).

Elsewhere at Copán (Stela H, Entry 27, fig. 19, *i*), the Maize God is shown holding a stafflike object, at the top of which the head of the Long-nosed God appears. Some connection with Entry 26 seems obvious. If the staff symbolizes water, the conventionalized plant growing from the head of the god could mean that the idea of balanced water and vegetation is intended. Somewhat similar staffs appear at Yaxchilan, although the designs from the region of the mouth, here forming handles, are so rudimentary that it seems hardly conceivable that they could symbolize water (Maudslay, 1889–1902, vol. 2, pls. 81, 82). The Yaxchilan headdress is distinctive and reappears on staffs showing a Long-nosed God head at Palenque (Entry 37, fig. 19, *e*). On each of the Palenque staffs, a short narrow design that is reminiscent of probable streams of water depicted at the site passes from the mouth of the Long-nosed God. The head is inverted, and this suggests a connection with the rear head of the sky monster. However, it also means that the waterlike designs pass upward from the mouth in a most unrealistic fashion. This would seem to indicate that the concept of falling water was not the uppermost factor involved in the artist's choice of subject matter.

It will be recalled that waterlike designs characteristically descend from the sky monster's inverted rear head, as well as falling from the mouth of its front head (Entries 34, 35, 40, 41, figs. 17, *a′*, *b′*, *d′*, 18, *b*). Such designs are virtually identical in appearance and are often marked with the same glyphs. It is accordingly of special interest when a single representation shows flamboyant designs falling from the mouth of the Long-nosed God while corresponding designs rise from its head. In such cases the attributes of the front and rear heads seem to have been combined in a composite entity. This is not to say, however, that the design rising from the head is necessarily water. Closely corresponding representations of this type occur at Quirigua (Entry 46g, h, fig. 23, *g*) and Jonuta (Entry 32). Lightly incised

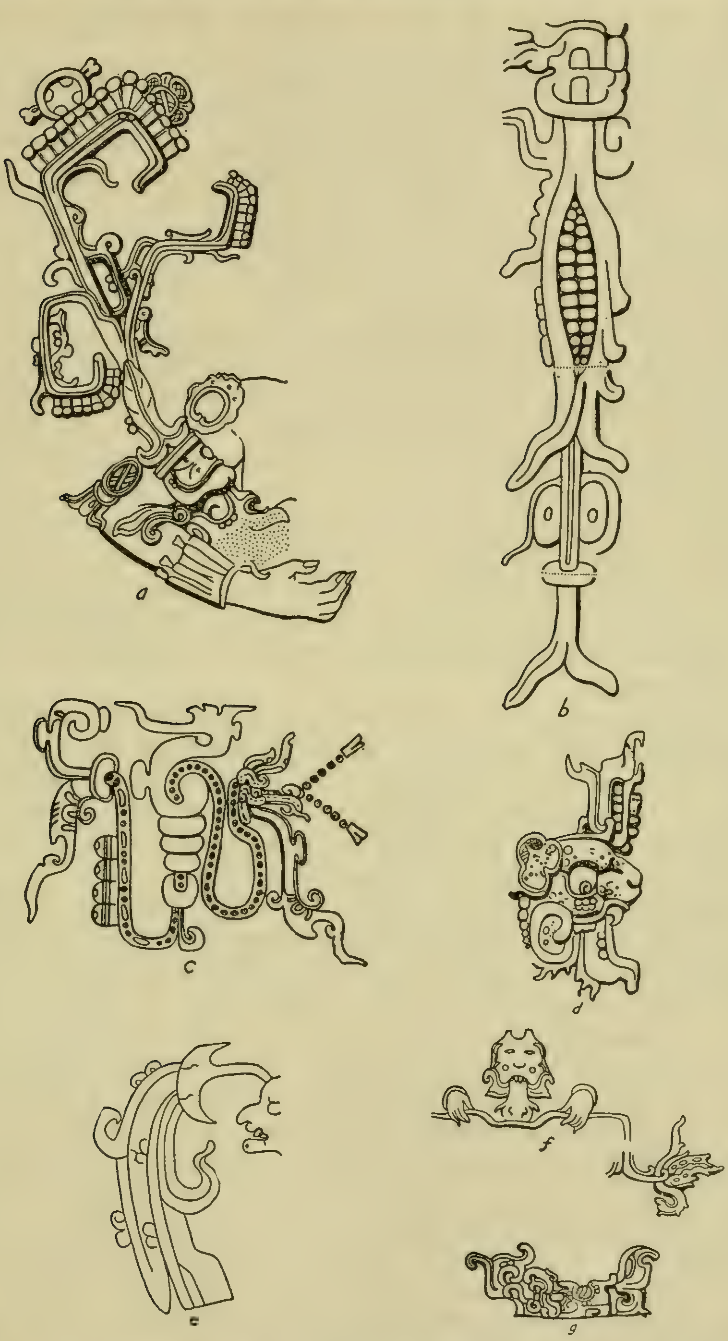

FIGURE 23.—*a*, Palenque, House D. *b*, Palenque, Temple of the Sun (Entry 36). *c*, Nexapa (Entry 63). *d*, Tikal, Temple IV (Entry 48). *e*, Chama (Entry 59). *f*, Quirigua, Zoomorph P (Entry 46a). *g*, Quirigua, Zoomorph P (Entry 46g).

glyphs are present in the waterlike designs issuing from both the head and mouth at Jonuta.

A flamboyant treatment of the serpent's tail is frequent in Maya art, and perhaps it is the better part of valor to recognize the fact and let it go at that. But inverted heads of the Long-nosed God occur rather often at the end of serpent tails, surely as manifestations of the sky monster's rear head. In such cases, elaborate scrolls are often shown passing down from them (Maudslay, 1889–1902, vol. 1, pl. 23; Spinden, 1913, fig. 81; Maler, 1908, pls. 8, 10, No. 2, 13, No. 1). The analogy to Entries 34, 40, 41 (figs. 17*a′*, *b′*, *d′*) is clear-cut. When, therefore, the same scroll appears directly at the end of a snake's tail, without the intervening grotesque head, the conceptual linkage presumably remains close with the classic sky monster as depicted at Palenque and Piedras Negras. Entry 63 (fig. 23, *c*), a ceramic design in Mayoid style from Salvador, displays such a treatment of the serpent's tail. The lower arm of the scroll attached to the tail is strikingly similar to the design that tumbles down from the serpent's mouth. Elements that correspond in outline to the completion (zero) glyph occur in both these representations, at tail and mouth, connecting them with one another and, perhaps, to the more surely identified streams of water in which the completion sign so frequently appears.

Waterlike designs appear beneath the upper jaws of two serpent heads painted on a vessel from Yalloch (Entry 66, fig. 20, *e*). Pseudoglyphs may occur in the designs. The representations would seem, however, to depict some form of pendant object rather than actual streams of water, for the objects are clearly fastened to the jaws of the serpents and feathers to the base of the objects.

Narrow designs, differing widely from the appearance of falling water, pass from the hands of human figures on Mayoid vessels from Salvador (Entry 56) and the Ulua Valley (Entry 65, fig. 19, *d*). The Ulua design assumes the form of a highly conventionalized serpent head. A pseudoglyph is attached to it. Both designs are of considerable interest because, like a number of probable streams of water at Teotihuacán, they branch outward from the hand, a scroll rising into the air while a vertical stream descends to the earth (cf. fig. 14, *b*). A further comparison with Teotihuacán, and with such Mexican codex portrayals as that on Borgian 72, is presented in Entry 65 by the occurrence of an eye in the supposed stream of falling water. (Cf. Von Winning, 1947 a, p. 334, and footnote 14, above.) Positionally, the hand in Entry 65 compares rather closely with hands elsewhere in Maya art from which better identified streams of water descend (pl. 76, *b*, *c*; fig. 18, *a*, *b*; cf. additional hands in fig. 19).

Several representations which fail to show anything that could be interpreted as streams of water have glyphs attached to the mouth or directly beneath it. This association could be significant in view of the frequent emergence from the mouth of waterlike designs in which glyphs appear. This is particularly true in those instances where other portions of the representation have features that are commonly found with water. A design from Pier c of House D in the Palace, Palenque, is suggestive in this respect (fig. 23, *a*). Taking the form of a highly conventionalized serpent head, what must be vegetation of some sort grows from the detached rear head of the sky monster (cf. Entry 55, pl. 75, *b*). Placed against the serpent's upper jaw are the signs for kan and completion (zero). They may be shown as emerging from the serpent's mouth and therefore be comparable to the yax and completion signs that descend in different streams of water gushing from the front head of the sky monster (Entries 34, 41, fig. 17, *a*, *d*). The further interchangeability of completion, kan, and yax may be indicated by the fact that the representation shown in figure 23, *a*, is enclosed by a border of completion symbols, while a border of yax signs on the adjacent Pier d and kan symbols on Pier e take the place of the zeros (Appendix A; Thompson, 1950, pp. 276–277). Elsewhere, pseudoglyps appear in connection with the upper jaw of a modified serpent head (Spinden, 1913, fig. 34, *d*). On Lintel 3 of Temple IV, Tikal—the source of Entry 49 and therefore possibly depicting water from the mouth of a Long-nosed God—an owl appears above the body of a double-headed serpentine monster (Maudslay, 1889–1902, vol. 3, pl. 78). The "moan" or "serpent" bird occurs frequently in this position, so its association with the double-headed monster is known to be an intimate one. A yax sign appears at the beak of the bird, suggesting as in figure 23, *a*, that water is symbolized as emerging from the mouth. The occurrence at Teotihuacán (Entry 2) of probable water symbols at the mouths of mythical beings seems to indicate a comparable form of symbolism.

Other symbolism, wherein water is not actually depicted but one of its associations is implied, may take place on the elaborate loincloth aprons shown so frequently in Classic Maya sculpture. Serpent heads are shown in profile, their noses turning outward as frets (Proskouriakoff, 1950, p. 70, figs. 24–26). It will be recalled that a serpent head is depicted at the bottom of the breechcloth on Stela 1, Izapa (Entry 16, pl. 75, *a*) and that its presence was tentatively suggested to symbolize the descent of water between the legs. It should be unnecessary to caution against drawing definite conclusions on such shaky data; obviously, one cannot assume aquatic symbolism every time a snake is encountered in Mesoamerican art. On the other hand, the treatment of the back of the black god's breechcloth as a stream of falling water on Dresden 74 (pl. 72) should not be dismissed too lightly. The apron of the figure on Stela 6, Copán (Entry 28) is of particular interest for its possible aquatic symbolism. A design somewhat resembling Von Winning's treble scroll motif at Teotihuacán occurs toward the top of the apron, while another design, generally similar to the Teotihuacán trilobal drop element, hangs pendent from its base. It will be recalled that simple drops are frequently attached to the treble scroll at Teotihuacán, offering a close analogy to the placement of the trilobal element at Copán (Neys and Von Winning, 1946, fig. 1; Von Winning, 1947 a, fig. 3). However, the trilobal element also has analogies to Proskouriakoff's "leaf-and-fringe" motif (Proskouriakoff, 1950, fig. 13, *a–s*). Tending to support the identifications of water symbols on Stela 6 is a horizontal row of hooklike elements, closer to the lower end of the apron. It may not be too far-fetched to see a reflection of the descent of water upon surface water. The supposed symbolism is strikingly Mexican in the use of its motifs. This may not be too surprising inasmuch as Stela 6 is dominated by Tlaloc heads, replete with the trapezoidal year symbol. Motifs similar to both the trilobal element and treble scroll of Teotihuacán decorate still other loincloth aprons on Classic Maya stelae, at Piedras Negras, Cancuen, and Naranjo (Proskouriakoff, 1950, figs. 13, *p*, *q*, *s*, 26, *i*, *k*, *m*). Particularly in the trilobal design at Piedras Negras, resemblances occur with a probable water symbol on Monument 9, San Lorenzo (Stirling, 1954, pl. 18) as well as at Teotihuacán. In addition to the three main "drops" at Piedras Negras, two vestigial droplets may be shown about to descend (cf. the five drops, two short, at San Lorenzo, and the treatment of one of the projections assumed by the stream in figure 20, *c*, Quirigua). Inasmuch as the motifs depart somewhat from the Mexican examples, particularly in the leaflike treatment of the trilobal element, they may not warrant this extended discussion. If their identity were established, however, they would constitute a connection of considerable historical significance,[25a] let alone the support that they would give to the supposed symbolism of the descent of water between the legs.

PROBABILITY B: FANG, TONGUE, OR WATER (?)

A more stereotyped motif, with correspondences both to the supposed portrayals of water and to Maya conventionalizations of fangs or serpent teeth, is shown from time to time descending from the upper jaw of various grotesque heads. The argument as to its closest artistic affiliations need not be pursued at the moment, two observations being sufficient. Teeth, fangs, and tongue have an even more apparent association with the mouth than have streams of falling water. The design in question does not occur in known portrayals of water.

[25a] The distribution of the trilobal drop element in Mesoamerica need not concern us here, although its presence on Teotihuacanoid pottery at Kaminaljuyú does bring the indisputable portrayal of the motif close to the Maya area (Kidder, Jennings, and Shook, 1946, fig. 205, *e*, p. 221).

However, the beings with which the design sometimes appears are known to produce water from their mouths. On Madrid 30b water is shown falling from the mouth of an animal identified as a jaguar by Tozzer and Allen (1910, p. 356). In Entry 48 (fig. 23, *d*), from a Tikal lintel, an unmistakable jaguar head, lacking the lower jaw, is shown with the design in question descending from its mouth. Entry 64, from Uaxactun, compares closely. Elsewhere heads, which may possibly be those of jaguars but are lacking spots, decorate feather capes, while designs of allied type pass downward from their mouths (Entries 38, 39, 47).

Gaiters and corresponding ornaments on the forearms are worn by the probable water pourers at Yaxchilan (Entries 50–54, fig. 19, *f*). The ornaments consist of two serpent heads, often in conjunction with Proskouriakoff's leaf-and-fringe motif. The snake heads are united by her twisted band or mat motif, the upper one being inverted (Proskouriakoff, 1950, p. 97). Linked in this way, the heads are analogous to the double-headed monster, although it must be admitted that, inasmuch as the motif is comprised of separate, widely distributed elements, the correspondence may be accidental. The flamboyant motif which may represent teeth, tongue, or water rises from the jaw of the upper, inverted serpent head. The comparison is close with Entry 37 (fig. 19, *e*), which on other lines of evidence has itself been associated with the double-headed monster. Via figure 19, *e*, then, the Yaxchilan ornaments and the distinctive motif from their mouths may be connected with better authenticated water representations such as figure 18, *a*, *b*. But, as ever, the ascent of water hits a discordant note.

Water has been identified as falling from the mouths of Tlalocs at Teotihuacán (Entries 4, 12, and perhaps 7). The fang-tongue-water (?) motif appears at the jaw of several probable Tlaloc heads in Maya art. A possible variant of the motif in front view occurs with the mouth of a Tlaloc head in a sculpture from the Hieroglyphic Stairway, Copán (Entry 30). Stela 6 at Copán is especially rich in the portrayal of Tlaloc heads, typical profile examples of the motif occurring with two of them (Entry 28). These Tlalocs appear in the jaws of serpent heads at the ends of a Ceremonial Bar, so, indirectly, water may be intended to be shown emerging from the mouths of the double-headed monster. The same set of concepts seems to be expressed on Lintel 25, Yaxchilan (Entry 55, pl. 75, *b*). In this case, the upper Tlaloc head serves as a mask, appearing before the face of an anthropomorphic figure, holding spear and shield, who emerges from the jaws of a double-headed serpent. The armed figure, in possible connection with water, recalls the Long-nosed God on Stela H, Quirigua (fig. 20, *c*). Another Tlaloc head, with a similar design emerging from its mouth, occurs in the jaws of the smaller rear head. The imbricated or trapezoidal year symbol, so commonly associated with Tlalocs in Mexico, appears to reinforce their conceptual as well as their artistic identity with the Mexican rain god.[26]

Designs which differ from the fang-tongue-water (?) motif nevertheless fit into the same complex. In Entries 49, 24, from Tikal and Bonampak, respectively, a Long-nosed God and figures with jaguar paws emerge from the serpentine mouths of the double-headed monster, while designs somewhat reminiscent of the motif in question descend from the gods' upper jaws (cf. Entries 28, 55). In Temple 26, Copán, hunched-over figures have Tlaloc attributes but the "water" from their mouths is very different artistically (Entry 30, pl. 76, *d*, *e*). It is featured, in plate 76, *d*, by a divided stream and a detached drop, the latter surely indicative that some sort of liquid is portrayed.[26a] There is some suggestion that these seated figures are wearing masks. A detached and fleshless upper jaw, with goggle eye and prominent teeth, is larger but otherwise identical to a corresponding jaw at the neck of the figure (pl. 76, *e*). It is on end, apparently set aside. Perhaps, as on Lintel 25 at Yaxchilan (pl. 75, *b*), the water is to be thought of as emerging from the mouth of the Tlaloc mask rather than from that of the being wearing it. More peripheral to the complex surrounding the fang-tongue-water (?) motif, but connected with it through the emergence of a possible stream of water from the mouth of a jaguar, are the ceramic designs in Entry 60 (fig. 15, *a*–*c*). The branching of the designs into semidistinct elements presents analogies to motifs which, with varying degrees of certainty, have been identified as water (pl. 74, *b*, figs. 14, *a*; 17, *d*; 19, *b*–*d*; 21; 22; 23, *c*, *g*).

ARTISTIC TYPOLOGY AND MISCELLANY

The case for the identification of water in Classic Maya art has by now been largely presented. The detailed associations which have been traced through a series of interlocking complexes constitute some of the most telling evidence. Certain artistic data—the resemblance of individual designs to known portrayals of water—have been examined. It remains only to systematize matters of typology, evaluate the extent to which the designs give the appearance of falling water, and seek distributional trends.

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[26] García Payón, 1939, pp. 242–244, figs. 1, 2, and Thompson, 1950, p. 145. The year symbol is shown emerging from the mouth of a Tlaloc at Uxmal (Spinden, 1924, fig. 321—an association reminiscent of yax, kan, and completion signs with the upper jaw in Classic Maya art.)

[26a] Toward the base the drop is marked with a wavy horizontal line. In this respect, as in shape, it bears considerable resemblance to examples of the "dripping water" symbol at Teotihuacán (Von Winning 1947 a, fig. 1, *e*, *g*, *l*, *m*). Such factors, plus the large size accorded the representations, make the case for an identification of water very attractive for these Copán sculptures. It is, nevertheless, only fair to note that in size and appearance other sculptures at the site are transitional to water and to normal tongues, speechscrolls, or the fang-tongue-water (?) motif (photographic files, Department of Archaeology, Carnegie Institution of Washington, Nos. 37-13-144, 37-13-217, 37-13-221, 37-13C-3, 39-13B-338, 39-13B-346).

Three primary artistic types have already been given tacit recognition. The categories are based primarily on the over-all shape of the motif, rather than on such elements as interior markings or stylistically governed treatments of the outline. It sometimes is possible to find important correlations with these other features, however. Several representations defy a simple classification but need be of no concern in the present discussion of general tendencies. The types are characterized, respectively, by a modified columnar shape, by division into semi-independent branches, and by a scroll (perhaps indicating a pair of scrolls if seen in front view) flanking the upper portion of a rather narrow element. The third type, referred to previously as the fang-tongue-water (?) motif, tends to be the smallest in size and of most highly standardized appearance. The first and second forms will be known hereafter as the columnar stream and the divided stream, respectively. Important relationships on an artistic level occur among the types.

Prominent features of the columnar stream are unusual length as compared to width and a slightly undulating outline that does not, however, depart markedly from the vertical axis. Apart from a general fluidity of line—a stylistic characteristic of Classic Maya art, especially in certain periods (Proskouriskoff, 1950)—the undulation is obtained primarily by the use of projections and scrolls. Slight changes in the width of the stream also contribute to this effect (fig. 20, *a*, *c*, *d*). The projection typically passes downward and the scroll upward, although the generalization as to the former meets numerous exceptions (cf. figs. 18, 20, *c–e*). The projections, which may appear along one or both sides of a stream, require somewhat less space than the scrolls and tend to be repeated more often. Some tendency exists for a scroll to be placed very close to the top of the stream, although quite frequently it occupies a medial or basal position (figs. 18, *a*, 20, *a–c*). Projections tend to be of standardized size and shape and scrolls to be tightly coiled, but again exceptions are to be found (figs. 18, 20). Considerable variation in detail is present, then, within the columnar stream.

An ideal form of the columnar stream, to which water from the mouth of the sky monster on Dresden 74 would nicely conform except for the absence of scrolls (pl. 72), may be abstracted. Perhaps figure 18, *a*, from the Temple of the Cross at Palenque, can be thought of as most closely corresponding to this central tendency. It is approached in a fair number of examples (see fig. 16, where, however, the emphasis is on resemblance to Dresden 74 rather than to an idealized type). The main body of the stream passes downward, but a short distance below its source—too far down to be a curling fang from the mouth—a tightly rolled scroll swirls up. The vertical descent resumes but again is modified, this time by the occurrence of projections. At least one projection is present in a medial position, while a balanced pair appear at the base. The projections are especially characteristic. They jut outward and downward, the lower edge of each dipping upward slightly to form a spatulate depression. The latter feature is a stylistic trait that appears in nonwater designs, as well (cf. Proskouriakoff, 1950, pp. 34–35, fig. 12, *z*). Here, however, it is not merely combined with a distinctively shaped protuberance but has a functional relationship to interior markings. Essentially vertical lines or bands which start out at the interior of the design pass outward and downward, at approximately 45-degree angle, bisecting the edge of the stream at the under side of a projection. A truly distinctive configuration results from this combination of elements: the vertical column; modification of its exterior by projections of standardized shape and, relative to the width of the column, size; its interior modification by lines that pass outward to become a part of the projections. (Compare pl. 72; fig. 18, *a–d*. Compare further pl. 76, *b*—carved in the round, shorter, but still remarkably similar—and fig. 14, *c*, the latter from Mexico.)

Another feature of the ideal columnar stream is the presence of numerous interior markings, viz, marginal circles, interior dots, marginal circles in connection with bonelike or shell-like elements, and interior vertical lines (pl. 72; figs. 18, *d*, 20, *c*, 18, *e*, respectively). As all are elements of design with a wide distribution, in other streams as well as nonwater representations, they are not diagnostic of the type. It is of some interest that an additional widely occurring element of abstract design, double outlines at the margin of the representation, is virtually absent. In this a comparison exists with the fang-tongue-water (?) motif but a sharp contrast with the divided stream.

The divided stream conveys an impression of vertical descent primarily through suggestion, for the modification of a columnar outline is very great. The stream may divide into semidistinct entities shortly after it has left its source (fig. 21, *c*) or even before it emerges into view (fig. 22). A tendency is marked for one or two of the branches, that flank a central one, to twist upward in a large protuberance or scroll (figs. 17, *d*, 22, *a*, *b*, 21, *c*). The scrolls are loosely rolled, contrasting with those on the columnar streams in this respect. They break down to the extent of merging into the hook-shaped protuberances. This treatment also occurs on the less typical of the columnar streams (cf. fig. 20, *b*, *c*). Other protuberances are reduced and fringelike (figs. 21, *a*, *b*, 22, *a*, *b*), differing again from those that characterize the columnar streams. Especially at Quirigua, the divided stream, like its columnar relative, shows a tendency to branch at the base; the resemblance, while generalized, is specific enough to be of interest (cf. figs. 20, *c*, and 22, *b*; 18, *a*, *b* and 22, *a*). Various types of interior marking are repeated, the double outline being much more frequent than on columnar streams (figs. 17, *d*, 21, *c*, 22, *c*) but vertical interior lines less common. Altogether the divided streams display the greater flamboyancy of design run riot. At the same time, in a highly impressionistic yet forceful manner, they suggest the splashing of a liquid on the ground.

The third type, the so-called "fang-tongue-water (?)" motif, reveals suggestive resemblances to the various objects embodied in its name. Viewed in profile it shows a scroll combined with a longish element, and inasmuch as the motif occurs exclusively at the upper jaw of some being, the possibility exists that a curling fang from the corner of the mouth may be shown in connection with a tongue. The sculpture from the stairway proper in Entry 30 shows a seeming variant of the motif in front view. As befits fangs at the corners of the mouth, a scroll flanks the exceptionally elongate vertical element on either side. Resemblances to figure 23, *d*, are especially apparent and lend added weight to this interpretation. On the other hand, series of transitional forms are not known which would connect the vertical element with the typical serpent tongue in Maya art (see Spinden, 1913, fig. 30). Thus, even if the scroll could be shown to depict a fang it is possible that the semidistinct vertical element indicates water. The incisor teeth of the serpent perhaps show the greatest correspondence of any identifiable art form to the motif (fig. 19, *h*). The incisors are usually treated in flamboyant style, a curling element flanking a more vertical one. It is rare for the latter to pass much lower than the scroll, although this occasionally occurs (Maudslay, 1889–1902, vol. 2, pl. 69). Comparative evidence would perhaps more strongly favor the portrayal of a great tooth than of a combined fang and tongue, although the degree of elaboration would have to be much greater. Moreover, the motif characteristically emerges from behind a row of teeth, eliminating this as a possibility unless duplication has occurred.

Resemblances also exist to the more likely portrayals of water, particularly to the columnar stream. It will be recalled that many columnar streams are also featured by much the same combination of a vertical element and flanking scroll near its top (pl. 76, *b*, *c*, *e*; figs. 18, *a*, *c*, 20, *b*, *c*). In such cases, however, the scroll is usually fuller, just as the vertical element is thicker and longer.[27] Elements of interior marking, projections, and a dividing base are also characteristics which are generally lacking on the fang-tongue-water (?) motif. All in all, the case for an identification as water is not impressive if it is based solely on the appearance of the motif. Moreover—and here the evidence of color may finally be brought to bear—a variant of the motif at Bonampak (Entry 24) is reddish brown, certainly more indicative of the tongue, or perhaps of blood, than of water. It may be significant that the color green, characteristic of rain in the codices, occurs prominently elsewhere in the murals although not in this potential portrayal of water.

The waterlike appearance of the columnar and divided streams is much greater.

(1) A splashing quality is indicated by somewhat varying techniques. The forms achieving this impression are basal projections (on both columnar and divided streams); a basal scroll in connection with a branching horizontal band (figs. 20, *c*, 22, *b*); and, in the case of the divided stream, the upward turn of its many branches.

(2) Occasionally, instead of turning back upon itself or "splashing," the falling stream will change its course to a horizontal one; very shortly thereafter the stream resumes its descent (figs. 18, *d*, 23, *c*). It is as if the stream fell upon an object, which is in fact clearly illustrated in figure 18, *d*, and then spilled off of it.

(3) The quality of undulation provided by nonbasal scrolls, projections, and changes in widths have already been commented upon in the case of the columnar stream. Differences in specific form characterize these elements as they appear on the columnar and divided streams, but in general they may be said to have a slight occurrence on the latter and hence contribute to their waterlike appearance.[28]

(4) Small, detached elements suggest the occurrence of individual droplets. They are very infrequent (pl. 74, *b*; fig. 18, *e*) but significant as evidence that some type of liquid is portrayed. Plate 76, *d*, is especially convincing. The drop is tearshaped and portions of the stream directly above it pass downward as though they, too, are about to detach themselves. A similar appearance is conveyed in figure 20, *c*, where lengthening drops could be indicated as about to detach themselves from the base of the uppermost projection.

(5) Elements of interior marking suggest the multipartite nature

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[27] These comparisons are based upon the size of the motif relative to the head of the creature from which it emerges, not just on the absolute area which is occupied.

[28] It should be pointed out that "changes in width" refers to a specific contraction or expansion of the stream by direct means (figs. 20, *a*, *c*, *d*, 22, *a*), rather than by the use of scrolls, projections, and spatulate depressions. Scrolls and projections are discussed separately; the depression is a stylistic trait of wide occurrence in late Classic art. Nevertheless it, too, contributes to the appearance of an undulating stream (see fig. 21, *c*, for a good example of it, not in connection with the projection).

of a stream of water. As has been granted, the elements are common ones in Maya design and would seem to lack specific connotations of water in most of their occurrences. It is possible that some of these elements originated in portrayals of water and spread to other representations; convergence of a reverse order may have been the case; again, their origin might have been a purely artistic one, without reference to conceptual matters. The point made here is simply that, whatever their origin, they suggest the existence of small particles and of motion within the outline, thereby making a contribution to the waterlike aspects of the design (see "Artistic Approach to the Identifications," p. 292).

Representations of rain and other falling streams in the Dresden Codex prove that certain of the Maya regarded many of the design elements in question as fitting accompaniments to water. These elements are not employed to show rain in the other Maya codices, and as a consequence the Dresden manuscript stands apart from them, insofar as water is concerned, having its stylistic affiliations rather with the Classic art of the monuments.

The Dresden Codex shares the following elements of marking with a body of supposed portrayals of water on the monuments:

(1) Marginal circles.—An essentially vertical row of closely grouped circles or dots appears along the margins of the design (pl. 72; figs. 15, *b*, 17, *c*, *d*, 18, *d*, 19, *a–c*, 21, *c*, 23, *d*, *e*).

(2) Interior dots.—Essentially vertical rows of dots, often smaller than those of No. 1, appear within the design (pl. 72; figs. 15, *a*, *e*, 18, *a*, *c*, 19, *a*, *c;* also 18, *b*, 22, *a*, *c*, 23, *e*).

(3) Interior lines.—Essentially vertical lines or bands appear within the design (pls. 72, 76, *b–e*, *f;* figs. 15, *c*, 18, *b*, *e*, 19, *f*, 22, *b*).

(4) Interior lines–projections.—These lines and their functional relationships with the projection have already been discussed (pl. 72; figs. 17, *a*, 18, *a–c*, *e;* cf. pl. 76, *b*).

(5) Double outlines or marginal bands.—Heavy dark green bands occasionally occur at the margins in the Dresden Codex (pl. 72, streams from the sun and moon). Double outlines are reminiscent in certain representations from the monuments (figs. 15, *a*, *b*, *e*, 17, 20, *c*, *e*, 21, 22, *c*, 23, *c*, *d*, *g*).

Certain additional elements of marking occur in a body of supposed portrayals of water on the monuments but not in any of the codices including the Dresden:

(6) Marginal circles–bone.—Marginal circles, usually two in number, appear above a bonelike (Spinden, 1913, fig. 115) or shell-like (pl. 75, *b*, headdress) element (pl. 76, *b;* figs. 17, *b*, *d*, 18, *a–d*, 20, *c–e*, 21, *c*).

(7) Interior dots–projections.—Number 4, above, is duplicated, except that a row of small circles passes outward to form the lower part of the projection (fig. 18, *d;* cf. fig. 19, *a*, *c*).

(8) Interior line–scroll.—Similarly, an interior line passes outward and downward to form the lower part of the scroll (fig. 18, *a*, *e;* cf. figs. 18, *b*, *c*, 20, *a*, 23, *e*).

Inner lines of a somewhat different sort suggest the sweep of the scroll in most cases where that element occurs.

(9) Crescentoids.—Crescent-shaped elements, possibly originating in shells (Kidder, Jennings, and Shook, 1946, p. 223), appear within the design (pl. 76, *b;* figs. 17, *a*, *c*, 20, *a*, *b;* cf. fig. 20, *e*).

Still another element of marking is of more restricted occurrence, appearing in the Dresden Codex and elsewhere:

(10) Horizontal band or line.—A horizontal band or line cuts across the falling water, in the upper part of the stream (pls. 72 (in the stream poured by Goddess I), 76, *b*, *d;* figs. 15, *e*, 20, *e*). The element is much more characteristic of portrayals of surface water.

The Dresden Codex also shares certain elements of specific form, which have been discussed previously, with many supposed portrayals of water on the monuments. The elements in question are projections (used in connection with interior lines), basal projections, and the spatulate depression. A fourth characteristic feature of "water" on the monuments but lacking in the Dresden is the scroll or its loose, hooklike counterpart. Add to these the generally similar elongate columnar shape as well as specific markings of interior design, and it will be seen that, upon analysis as well as impressionistic observation, the stream from the jaws of the sky monster on Dresden 74 has close and insistent correspondences with many of the proposed portrayals of water (fig. 16). Certain resemblances to the more usual portrayal of rain in the Maya codices also exist. Again they are with the Dresden Codex in figures 15, *e*, 23, *e*, both incised on pottery from Chama. In the painted ceramic design in plate 76, *a*, from Quintana Roo, the resemblances are somewhat more generalized in nature.

Outside the Maya area, too, known or well-established portrayals of water have important correspondences with motifs in Classic Maya art. Most have been cited in support of the identification of water given specific Maya designs, but they merit summary. The Aztec sculpture in plate 74, *b*, and Laud 1 (fig. 14, *a*) resemble the Mayan divided stream, while Laud 1 also displays a double outline. Certain Teotihuacán designs, which branch into sharply rising and falling elements, resemble figs. 15, *b*, 19, *d*, from the Maya area. Teotihuacán water, with its occasional floral fringes, shares with the Borgian Codex (pl. 73, *b*) a highly specific resemblance to the stream in plate 76, *a* (Entry 62). Nuttall 19 (fig. 14, *c*) has projections of a characteristically Mayan form; the stream is also segmented in a way reminiscent of figure 20, *e*, although this treatment is highly atypical in both areas. Turning to some of the less positively identified designs in Mexican art, possible streams of water at Tres Zapotes suggest the marginal circle (pl. 74, *c*) while the marginal band, or double outline, and basal scrolls on probable water at Izapa (pl. 75, *a*) indicate the possibility of close Maya affiliations.

Within the streams shown in Classic Maya art, the major artistic divisions exist along typological lines. The classification accorded individual streams is indicated in table 4. Palenque, Yaxchilan, Copán and Quirigua are the centers where the columnar streams occur prominently. It is of no little interest that these almost fully comprise the sites where Classic sculpture attained its greatest developments. One can only speculate if the correlation is an accidental one. The divided stream also appears at Quirigua, where it dominates Zoomorph P, while at Copán the fang-tongue-water (?) motif appears frequently with Tlalocs. At Yaxchilan the same motif occurs often but in a minor position, as an ornamental object of attire, and the divided stream is also present. Palenque is the only major site where the columnar stream exists in monumental art without strong competition from one or more of the other types. Of these four sites, Quirigua seems to display the least similarity to streams of water on Dresden 74 and Palenque or Yaxchilan, perhaps, the most. Stated on a regional basis the comparison is more clear-cut; the Usumacinta sites show greater similarities to Dresden 74 than do those in the Motagua basin, while comparable material is unknown from the Peten. Several representations showing similarity to rain in the Dresden Codex appear on pottery from Chama. Both divided streams and the fang-tongue-water (?) motif occur at Piedras Negras, while Tikal, Uaxactun and Bonampak show the fang-tongue-water (?) motif or variants of it.

Uncertainties of dating at Palenque and to a lesser degree Yaxchilan obscure the chronological picture, for these two sites yield a number of important representations. Moreover, the possible portrayals of water in Classic Maya art are so limited in number as to provide no firm basis for statistical treatment.[29] If the extant codices give any clue to the earlier situation, it appears that representations of water were largely confined to perishable materials during Classic times. When in addition to all this it is remembered that the number of stelae from the early Classic period is small (Proskouriakoff, 1950, fig. 3, *a*), little in the way of chronological developments can be even postulated.

The one striking fact that would seem to emerge from the tabulated data is the great priority of the fang-tongue-water (?) motif. Occurring in only slightly variant form in 9.2.0.0.0 (Entry 47, Stela 9, Tikal), it comes in perhaps as much as ten or more katuns before the possibly simultaneous appearance of the divided and columnar streams. This generalization is based on a single occurrence and so may mean little. However, the presence of the motif at Copán and Piedras Negras in katuns 12 to 14, when the number of monuments and hence of sculptured motifs was beginning to proliferate, gives the impression that the motif was already well established. This would not appear to be true of the columnar stream, unless its occurrences at Palenque are comparable in age. Moreover, if the latter motif was limited at that time to Palenque, as the extant data would suggest, the restricted distribution of the type could indicate a recent origin for it. The few stray occurrences of the divided stream in comparable times seem to center at Piedras Negras and Yaxchilan, with a slightly later shift to the southeast and a subsequent popularity on Zoomorph P, at Quirigua. Comparable designs on polychrome ceramics in Mayoid style are likewise from the southeast—the Ulua Valley and Salvador. One hesitates to make reconstructions from such limited data, however.

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[29] It is possible that a number of additional representations having as good a chance of being water as those of probability B can be isolated. No claim can be made to anything approaching completeness when the factors are so complex and difficult to evaluate. But unless standards are considerably relaxed, it is safe to predict that the sample will remain meager and unsatisfactory for statistical purposes.

WATER AND THE WATER LILY

Properly speaking, water is surely to be paired with varied types of vegetation in Mesoamerican art, not just with the water lily. This is recognized in the name given one of the configurations, "Balanced water and vegetation." Past research on the water lily in Maya art by the writer (Rands, 1953) has somewhat limited and directed the nature of the following observations, however. As was noted above (p. 272), an evaluation of the theory that the water-lily motif is of trans-Pacific origin must take into consideration the associations held by water, because the objects with which the water lily is depicted are virtually the same. The anatomical associations recognized for the water lily in Maya art are mouth, nose, eyes, neck, head or forehead, and hands. These are duplicated by well-established streams of water in the case of the mouth, eyes, and hands, while waterlike designs descend from the head. It seems that certain additional anatomical associations may also be held in common, while some of the supernatural beings that serve as the source of the plant or water are the same. Death symbols occur both with water and the water lily.

Designs falling from the inverted rear head of the sky monster, as well as from its detached rear head, are sometimes quite waterlike in appearance (figs. 17, *a′*, *b′*, *d′*, 18, *b*). This is particularly true of figure 18, *b*, from the Temple of the Cross at Palenque, which is nicely balanced with a detached but upright "front" head of the monster, from the mouth of which water is apparently depicted as falling (fig. 18, *a*). The same balancing of "front" and "rear" heads of the monster occurs in the Temple of the Sun, Palenque (Entry 36; figs. 18, *c*, 23, *b*). Yet the difference is notable. In the sculptures from the Sun, "water" from the mouth of the front head is shown in the tradition of Dresden 74, while the designs passing down from the two inverted rear heads are only vaguely comparable. Instead, the latter designs are treated so as to suggest vegetation; pods of seeds, or maize ears, seem surely to be shown. As one turns to still other sculptures at the site, the rear head of the monster is found in upright position and the plantlike designs—the celebrated "crosses" or "trees" of Palenque—grow upward from the head (Maudslay, 1889–1902, vol. 4, pls. 76, 81). The plants are highly conventionalized, especially in the Temple of the Cross, but their vegetal nature is clear enough to constitute a telling precedent for the growth of plant life from the rear head of the monster. Together with the evidence from the Temple of the Sun, this suggests that the pendent designs below all the inverted rear heads of the monster should be vegetation rather than water.

Working from the known or readily identifiable to the unknown, then, it has been possible to build up two cases, each of which is logically self-consistent but in opposition to the other. In a situation of this sort it seems fruitless to speculate about which explanation is "right" and which "wrong," although there do appear to be good reasons for believing that the growth of vegetation was the more widespread and hence presumedly older and more fundamental of the associations. Perhaps it was especially at Palenque and Piedras Negras, or in this general area,[30] that the priest-artists played with the motif of vegetation from the rear head so as eventually to transform it, by a sort of convergence, into an artistic and perhaps conceptual counterpart of the water emerging from the jaws of the sky monster's front head. In figure 18, *b*, there seems every bit as much reason to regard the design as water as to designate it vegetation, and vice versa. The case for either identification is a strong one. Under these circumstances it seems better to recognize the situation for what it is, and see powerful forces of convergence at work, than to shut one's eyes, throw up one's hands, and say that because of the contradictions it is impossible to tell and that the design therefore probably lacks conceptual connotations of any sort.

Additional data tend to associate the rear head of the sky monster still more closely with vegetation. Representations of the maize plant are commonly depicted as growing from the head of the Maize God, while with equal certainty water lilies emerge from the heads of other beings. Some of the latter creatures are, in fact, closely connected with the rear head of the sky monster (Rands, 1953, p. 104). Moreover, Proskouriakoff's "leaf-and-fringe" motif, regarded by the present writer as one of the less surely identified forms of the water lily, is known to occur in the headdress of the monster's rear head and with possible variants of this head (figs. 17, *a′*, 19, *f;* Proskouriakoff, 1950, p. 97, figs. 13, *a–o*, 35, *b′–d′*; Rands, 1953, p. 110).

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[30] Cf. the waterlike treatment accorded another design that descends from a head (fig. 23, *e*, Chama). It does not actually contact the head but passes from an object attached to it (cf. the composite headdress, with water included in it, on Fejervary-Mayer 33). Compare Entries 32, 46g, h (fig. 23, *g*), from Jonuta and Quirigua, which show "water" emerging from the mouth of the Long-nosed God and a similar design passing from its head.

Untabulated, other designs occur which show partial similarities to the above-mentioned representations from Jonuta and Quirigua. The balancing of water and vegetation is not clear on Stela A, Quirigua (Maudslay, 1889–1902, vol. 2, pls. 4, 8). But in Toltec period art at Chichén Itzá a similar scrolled, "waterlike" element passes beneath the mouth or neck of a long-nosed head, while the balancing element, rising from the head, clearly incorporates vegetation (Maudslay, 1889–1902, vol. 3, pl. 46, A–7). It is, presumably, the water-lily flower and rhizome (Rands, 1953, pp. 107–108).

It is conceivable that the Chama vessels show special kinds of balanced water and vegetation. Just possibly, the streams in Entry 59 issue from flowers whose stems are tied to the heads of the snail-shell deity, N (fig. 23, *e*; lines suggesting petals appear somewhat more convincingly in the corresponding design (Dieseldorff, 1926–33, vol. 1, fig. 71)). If so, the subject matter of the ubiquitous Teotihuacán motif of water dripping from flowers is duplicated. The snail-shell deity recurs in Entry 58, his shell apparently being worked into a water container (fig. 15, *e*). The mollusk shell worn by a closely corresponding figure (Dieseldorff, 1926–33, vol. 1, fig. 239) holds no water. Significantly, however, the shell serves as a probable water-lily rhizome, being attached to a flower (the Over-all water-lily type IIe of Rands (1953); see footnote 30 for additional examples of the way in which this form of the water-lily motif has close associations with falling water).

One of the more prominent associations accorded the water lily is with the head of a jaguar (more specifically, perhaps, at the back part of the head, or even around the ears or neck). This is shown in figure 23, *d* (Entry 48); a similar flower grows above the head of a second jaguar carved on the same lintel. The fang-tongue-water (?) motif appears below the upper jaw of the first jaguar. If water is shown, it is nicely balanced by the floral vegetation. The combined portrayal—flower growing at the head and the fang-tongue-water (?) motif or a variant of it at the mouth—occurs elsewhere with jaguars or with rodentlike animals (Entries 38, 44, 47, 64).

Not only is water known to emerge from the mouths of various creatures but so is the water lily. In Maya art the water-lily stem typically surges outward from the corners of the mouth. The scrolls at the sides of the fang-tongue-water (?) motif have a similar treatment, and if they actually form part of a stream of water it follows that they share with the water lily this precise portion of the mouth as the place from which they emerge. This is also true, of course, of the common curled fang in Maya art. Convergence may again be involved. Water seems to emerge from the mouths of Tlalocs in the murals of Tepantitla at Teotihuacán (Entry 4). In repeated designs in the same murals, a leaf-and-bud motif, which may well represent a water lily, emerges from the mouths of other Tlaloc heads. Stela 6, Copán, suggests a striking correspondence (Entry 28). The fang-tongue-water (?) motif appears at the mouth of two Tlaloc heads, while designs which apparently represent leaf or floral forms occur beneath the upper jaw of three additional Tlalocs.

The hand is shown as a source, or temporary source, of the water. In the case of the water lily, the hand is more apt to be shown holding on to the plant. The correspondence, then, is not a complete one, but it is close enough to warrant attention. Figure 23, *f*, shows the passage of the water lily stem through the hands in characteristic fashion. An object which may well be water tumbles down upon the stem from the mouth of the figure who is holding the plant, and if water is actually shown, its association with the water lily is here made very explicit.

While occasionally portrayed as probable symbols of rainfall in Mesoamerica, tears have not been recognized in Maya sculpture. Infrequently but with considerable elaboration, water-lily stalks are shown passing from the eye in Maya art.

Perhaps a definite association of the water lily with the region between the legs cannot be maintained, but certain data point in that direction. A fairly realistic flower and stalk serve as the lower portion of a breechclout on a vessel from Yalloch. Paraphernalia symbolizing the descent of water from serpent mouths seem to be shown on the same vessel (Entry 66, fig. 20, *e*). If this association were an isolated case for water-lily-like flowers it could easily be passed off, but a common motif in Classic Maya sculpture provides a comparison of possible significance. It is the leaf-and-fringe motif in its occurrences at the base of the loincloth apron (Proskouriakoff, 1950, p. 70, figs. 24, *i*, *q*, *r*, *t*, *w*, 25, *a*, *f*, *g*, 26, *o*). The criticisms to be leveled against this argument are clearly on the order of those which have been indicated in connection with the suggestion that the serpent-frets on the aprons of the Classic Maya indicate aquatic symbolism. Possibly the "trilobal drop" element decorating the aprons on certain Classic Maya stelae, with its resemblances both to the symbol which Von Winning has given that name at Teotihuacán and to the Maya leaf-and-fringe motif, is another example of convergence which has taken place in the treatment of water and the water lily.

CONCLUSIONS

Working where possible from the known to the unknown, the writer has traced a series of interlocking complexes that relates to falling water in the religious art of Mesoamerica. The specific arguments that water is actually portrayed need not be repeated here. They have been developed throughout the major part of the paper and are summarized, from the standpoint of methodology, in Appendix B. For many of the identifications, the evidence can perhaps be best appreciated by supplementing reading in the text with the visual presentation in figure 16. In this chart, an attempt is made to show some of the more important interrelationships of an artistic and conceptual sort, which link motifs that are known to be water with those of unknown significance and bind the latter into cohesive, closely knit yet interlocking groups.

It is possible to observe such a phenomenon, apparently, because the aboriginal Mesoamericans held more or less in common a series of concepts relating to the production of rain. The specific delineation of these concepts varied somewhat in time and space. Moreover, it would often seem that within a single cultural setting alternative ways of expressing any one of these concepts was not only possible but even encouraged. As a result of these factors—divergence through time and space, and divergence because of conscious artistic manipulation—a number of modal forms of representation came into existence which may be regarded as virtual synonyms. It is these different manifestations of basic underlying patterns that, because of their high incidence and their synonymous usage, are so frequently found to interconnect.

Imitative magic, or at least the type of analogies on which it is based, seems to have played an important role in Mesoamerican beliefs regarding the production of rain. The pouring and sprinkling of water are shown by documentary and ethnological sources to have this connotation, and this is reflected in the codices as well as in the earlier, less securely identified art forms. As a result, special significance would seem to have accrued to the hand and to water containers. This can certainly be asserted from the standpoint of the present investigation, and it probably also holds true for the way in which these objects were regarded in Mesoamerican thought. Weeping is known through documentary evidence to have been accorded coercive aspects, causing the deities to send rain, presumably in the form of tears (Appendix A). It is not known if urination, spitting or vomiting, or other liquid-excreting activities were held to have coercive magical powers, but it is clear that the rain deities were thought to produce rain in the same or analogous ways. As a result, great significance seems to have been given urination and perhaps other liquid-producing functions. For these and undoubtedly additional reasons, the region between the legs, and the mouth, also received special emphasis.

The evidence of art and ethnological data, as developed in the main body of the paper and Appendix A, suggests certain broad chronological changes in the popularity of these associations.[31] In all cases, however, the paucity of the data severely limits the reliability of any conclusions that may be drawn. The highly tentative nature of the following reconstructions must be borne in mind.

Tears are emphasized on an early horizon, pre-Classic in some instances (Entries 20 (?), 23), and their association with rainfall lasts until the present day. Nevertheless, the few scraps of data could suggest that tears as an art motif declined in popularity during the late Classic and post-Classic periods.

The hand is strongly associated with water in early Classic times, at Teotihuacán, and appears on the late Classic Maya stelae with considerable vigor. It is largely absent as a source of water in both the Maya and Mexican codices, however. Ethnological data reveal some importance for this association, but tend rather to emphasize an object held in the hand as a means of sprinkling. There is a temptation to postulate a rather late substitution of an aspergillum-like object for the hand proper, with a consequent lessening of the importance of the latter. Could Entries 35 to 37 and 26 27, 29, from Palenque and Copán (e. g. figs. 18, *a*, *b*; pl. 76, *b*, *c*) reflect the beginnings of such a development, the water being shown both as emerging from the hand and from an object, a god's head, above the hand? Unfortunately for this hypothesis, the god's head does not resemble the "aspergillum" or "hyssop" referred to by the Spanish sources, although compare Borgian 27, 28, and Selden 9.

The mouth forms another important association of water in Classic times, particularly if the fang-tongue-water(?) motif of the Maya actually depicts water. If so, streams from the mouth would occur in the early Classic both in the Maya area (Tikal) and at Teotihuacán. The real elaboration of the motif appears, however, to have taken place in the late Classic, among the Maya. Water is also depicted gushing from the mouth with some frequency in the codices, particularly those from the Maya area, and this would seem to indicate the association was a vigorous one shortly before the Conquest. Then comes an abrupt absence of additional data, hardly more than the suggestion that water might be connected with the mouth. The contrast is sharp and puzzling.

The pouring of water from a pottery vessel or similar container is known from the late Classic but seems to gain in popularity as one moves into protohistoric and post-Conquest times. Today, on an ethnological level, it is by all odds the most virile of the water associations in Mesoamerica. It stood in the same rank, but perhaps not as pronouncedly so, during the period from which the codices date. Although strong in Mexico, the main locus of the concept seems to have been in the Maya area. This may be reflected by modern folklore, which among the Maya is consistent in connecting water per se with the container, while the Zapotec and other Mexicans see clouds, hail, or wind as emerging from the vessels, which also serve as the storage place for various types of vegetation. (Perhaps this difference may also relate to the greater Mexican tendency to depict foreign objects falling in streams of water, which are often poured from containers.)

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[31] See table 6 for recorded presences or absences of a trait in the Maya and Mexican codices and documentary sources, at Teotihuacán, and on the Maya and non-Maya monuments and ceramics. These data have summary value along both distributional and chronological lines, although they do not reflect the intensity of a trait's occurrence.

The descent of water from between the legs may not appear until the period of the codices. It is more common in the Maya than the Mexican codices. The *bul-eb* bug and other data connect urination with rainfall or mist among the late Yucatecan Mayas. It is possible, however, that the association is also present in Classic Maya times, although if this is the case it appeared only in symbolic form, almost prudishly, at least on the stelae.

Representations of the other physiological associations, water from the breast and the body, are known only in comparatively late times. Really concrete evidence of them in the post-Conquest period appears to be lacking, notwithstanding certain suggestive data.

An association of a different sort derives from the occurrence of glyphs in falling streams of water. The appearance of symbols with supposedly aquatic value in streams at Teotihuacán is analogous and constitutes the earliest record of the trait. It comes in strongly during the late Classic, among the Maya. Their art repeatedly shows the signs for yax (green) kan (yellow), and zero or completion placed in the falling streams. These signs also occur as affixes in connection with waterlike designs in certain glyphs. Completion may also be present in water in the Maya codices. The existence of the day sign Eb in a stream is unquestioned (Dresden 74), where it constitutes a highly suggestive linkage with the *bul-eb* bug, urination, mist, and perhaps the pouring of water from a jug. During late times in Mexico, the appearance of a rubber-ball sign in falling water and references to green and yellow water provide interesting comparisons with the Maya developments. (See Appendix A.)

It may be permissible to regard the objects sometimes shown falling in streams of water as a variation on the glyph in water. The appearance of various objects such as shells and flowers in water at Teotihuacán establishes the occurrence of this trait in the early Classic period. Late Classic representations from the Maya area occasionally show a god, armed with spear and shield, in the water or closely associated with it. This seems a far cry from the Teotihuacán examples, but in Mexico during the protohistoric period it is a commonplace to find weapons of war associated with water, either as the *atl-tlachinolli* symbol, which sometimes passes, speech-scroll-like, from the mouth, or in the more realistic portrayals of falling streams. A connection may, therefore, exist. In the Maya codices, too, objects suggesting death and warfare occur either in falling water or with this intimate association.

Here we have been dealing with the configuration of death, destruction, and misfortune, which seems to have a close relationship with warfare. Other aspects of misfortune also enter the picture, to judge from the data of Appendix A. The failure of the crops, due to malevolent types of precipitation, would appear to be high on the list. The artistic data give little evidence along such lines, however.

Some of the configurations show a tendency toward spatial localization. The descent of water upon surface water is marked in Mexico, rather similar representations occurring from Teotihuacán to Izapa, on the borders of the Maya area. It may be unknown among the Maya proper, however. The descent of water on a human figure is likewise limited to Mexico, if scenes such as baptism and sprinkling are not considered relevant (Madrid 93c, fig. 19, *b*(?)). On the other hand, the double-headed serpentine-saurian sky monster is a specifically Mayan creation, and in pure form its association with water is obviously enough restricted to the Maya area. Nevertheless, snakes with water or water symbols emerging from their jaws do occur as far away as Teotihuacán. The widespread and frequent appearance of the bending-over rainmaker offers a notable contrast to the traits which have just been discussed.

A final trait whose distribution is of considerable interest is the association of Tlaloc with falling water. At Teotihuacán the deity would seem to have dispersed rain from his hands and mouth; at the time of the codices and Spanish contact Tlaloc sprinkled rain from objects held in the hand and, in apparently more characteristic fashion, poured it from vessels. In the Classic Maya period, particularly at the site of Copán, a goggle-eyed Tlaloc head is sometimes depicted. The fang-tongue-water(?) motif occurs frequently at its jaw, suggesting either the emergence of water from the mouth, as had presumably occurred at Teotihuacán, or the elaboration of the tusks so characteristic of the later Tlaloc figures. Whichever answer may come closer to reality, it is of considerable interest that goggle-eyed masks seem to be depicted at Copán with water gushing down from their jaws (pl. 76, *d*, *e*).

The artistic treatments accorded falling water seem to reveal greater regional specialization than is true of the conceptual associations, at least so far as "Mexican" versus "Mayan" spheres are concerned. The Aztec *atl* portrayal was widespread in the Mexican codices on a late horizon and is especially distinctive and standardized. A handful of pictures in the Mexican codices do, nevertheless, show rather close correspondences with Maya delineations of water. Projections on water as it occurs in a single scene in the Nuttall Codex (fig. 14, *c*) recall those on the Classic Maya columnar stream; a portrayal in the Laud Codex (fig. 14, *a*) is strongly reminiscent of the Maya divided stream; streams in the Borgian Codex are edged with presumedly floral elements of the sort that crop up once in a Maya representation (pls. 73, *b*, 76, *a*). Perhaps of any of the codices, the Borgian displays closest resemblances to falling water at Teotihuacán. Certain water symbols characteristic of Teotihuacán may be encountered at Monte Albán and, in somewhat variant forms, as widely as San Lorenzo in the "Olmec" region and possibly even Copán (Von Winning's treble scroll and trilobal drop element). The exceptional nature of these occurrences is to be stressed, however.

Falling water as depicted within the Maya area is subject to great variation. Even in the three extant codices the differences are marked. This is particularly seen in the Dresden, where certain streams more closely resemble representations on the Classic monuments than they do rain as shown in the other codices or, indeed, in other parts of the Dresden itself (cf. pls. 72, 73, *a*; figs. 18, 20). This may have implications as to the date of the codex, or its place of origin or copying. If so, however, they lie beyond the scope of the present study. More pertinent is the realization that, if known portrayals of falling water in the Maya codices can differ so greatly, it may not be surprising to find a substantial range of variation in the modes of representing the same subject in the Classic sculptures. The simultaneous existence of columnar and divided streams does not appear so strange when viewed in this perspective. There would appear even to be room for the fang-tongue-water(?) motif, if it could qualify as water on its own merits.

Insofar as a central tendency or common denominator exists to connect the three Maya artistic types, it is present in the form of the columnar stream. Like the fang-tongue-water(?) motif it often displays a scroll toward the top, flanking a longer, vertical element. It compares with the divided stream in its elements of marking. Nevertheless, the few chronological data suggest a much earlier date for the fang-tongue-water(?) portrayal. In the same way, it may be possible to speak of a central tendency around which the various columnar streams seem to cluster, without necessarily implying the priority of this form. Such an ideal type is best recognized at Palenque. There has been occasion to note that, of the four major sites in which the columnar stream occurs, it is only at Palenque that it exists without strong competition from one or both of the other types. A somewhat comparable situation exists in regard to the portrayal of the water-lily leaf at Palenque (Rands, 1953). Repeatedly, as one traces particular motifs in Classic Maya art, Palenque stands out as the site where the motif occurs in "purest" form. Does this imply that the art form originated in Palenque and spread from there into areas where alternative forms were already in use? Or does it mean that the priest-artists of Palenque somehow had the ability to abstract the essential characteristics of forms that had a wider distribution and then utilized their creation intensively? The problem has ramified implications, in terms not only of chronology and diffusion but of the sociocultural matrix in which artistic activities were based. Complicating factors are provided by the peripheral geographic position of Palenque and the highly individualistic nature of its stylistic school (Proskouriakoff, 1950, pp. 136–137). Unfortunately, the dating of the site is most uncertain (Proskouriakoff, 1950, pp. 120–121, 149).

The wealth of water associations displayed on Dresden 74 makes it a likely subject of comparison with many other representations. Parallels are numerous on Stela 1, Izapa, a non-Maya monument (pls. 72, 75, *a*). The fact apparently signifies nothing more than that great emphasis was given the treatment of water in the two scenes, the artists dipping independently into the vast storehouse of ideas relating to the production of rain that were widespread throughout Mesoamerica. On the other hand, the resemblances between the water-belching sky monsters of Palenque-Piedras Negras and the Dresden Codex are specific enough to suggest that something else may be involved (pl. 72; fig. 17). Such speculation is reinforced by the close artistic similarities of the falling streams in the Dresden Codex and at Palenque (pl. 72; fig. 18, *a*, *b*). Again, however, one would wish for a better knowledge of sky monsters and falling water as depicted on perishable remains, such as codices, before emphasizing areal relationships.

If the present study were primarily intended to determine time-space relationships, it would be imperative to differentiate the various factors which are responsible for the specific artistic correspondences. Surely, some of these resemblances are due to diffusion on a single time level, others to derivation from earlier culture patterns. Cross-cutting this complex situation is the further probability that in some cases merely the religious concept was taken over, while in other instances the concept was accompanied by a specific art form. Seen in this perspective, historically oriented studies become highly elusive affairs. The archeologist, accustomed to work in a context of *style*, is at somewhat of a loss when confronted with stylistically dissimilar yet unquestionably related *motifs*.[31a]

A concrete example may have illustrative value. A great variety of postures are assumed by the bending-over rainmakers in Mesoamerica. In folklore or religious speculation, it is highly improbable that the precise posture would be carefully delineated; generalized references would be sufficient.[31b] In religious art, however, it becomes necessary to sharpen the focus, endowing these leaning supernaturals with a specific set of postural attributes.

Working from artistically distinct backgrounds, the sculptors of, say, Zoomorph P at Quirigua and Stela 1, Izapa, portrayed the bending-over water pourers with quite different postures (figs. 21, *a*, *b*, 22; pl. 75, *a*). The stylistic relationship is, for practical purposes, nonexistent. But the priest-artist who depicted God B in the water-pouring act on Madrid 13b closely duplicated the posture of certain water pourers on Zoomorph P. This is to say that the fashion or style of portrayal is virtually identical, insofar as bodily position is concerned. Directly or indirectly, diffusion must have been involved in both the Quirigua-Izapa and Quirigua-Madrid cases. But the type of diffusion differed fundamentally. Such distinctions need to be made in time-space studies of art forms—water or otherwise—that are direct expressions of underlying concepts. Unfortunately, however, the precise techniques for accomplishing this are largely unexplored.

Streams of water and plants, the latter often to be identified as water lilies, display a remarkable tendency to occur in analogous situations. Associations with various parts of the body—mouth, eye, hand, and possibly the top of the head and the region between the legs—are strong in both cases. Many representations of both flowers and streams are in contact with these anatomical parts. In addition, a number of specific representations appear to emphasize this reciprocal relationship of water and vegetation. Striking examples of this seem to occur in the Teotihuacán murals (especially at Tepantitla in connection with Tlaloc mouths); again in connection with Tlaloc mouths on Stela 6, Copán (although this identification is made somewhat suspect by the presence of the fang-tongue-water(?) motif and the fact that the floral forms could be more realistically shown); and on the Piedras Negras-Palenque sky monsters and affiliated forms (where, whether "water" or "vegetation" is primarily intended in connection with the rear head, an ingredient of both must have intentionally entered into the portrayals).

[31a] It is true that archeologists are not prone to deal with the esthetic factors and artistic mannerisms that lie at the heart of an art style (cf. Proskouriakoff, 1950, p. 183). But it is equally apparent that most archeologists have shied away from a consideration of motifs removed from their stylistic context.

[31b] True, the precise postures taken by god impersonators in rainmaking ceremonies may have influenced beliefs regarding the postures of the supernatural beings themselves.

The occurrences of vegetation, especially flowers, with these water-like associations has a bearing on the theory of the Asiatic derivation of the Maya water-lily motif. This has been explicitly recognized in previous sections ("Introduction" and "Water and the Water Lily"). Perhaps the associations held in common by water and flowers grew up simultaneously, or perhaps they passed, through substitution and convergence, from one motif to the other. Nonartistic data should be utilized in an extended examination of the problem. Thus, Thompson (1950, p. 73), pointing out that the Maya term for the water lily, *naab*, also means the palm of the hand, has suggested that the flower's name was derived from the resemblance of a lily pad to the palm of the hand. However this may be, the name probably has some connection, directly or indirectly, with the frequent artistic motifs that show the water lily associated with the hand. Linguistic data should provide additional clues of value in making a detailed investigation of the associations held in common by water and the water lily. Especially in a culture such as the Maya, where double meanings were exploited, the devious route taken by converging art forms should thereby be better understood.

For present purposes, however, the data do not permit speculation as to whether the associations grew up around water, the water lily, or both simultaneously. Accordingly, no denial can be made to a theoretical position which would hold that the water-lily motif was of trans-Pacific derivation and, when transplanted to Mesoamerican soil, influenced the associations accorded falling water. It is of interest, however, that the early Classic murals of Teotihuacán appear to show both floral forms and water emerging from Tlaloc mouths. Whatever the ultimate origins may have been, the water and water-lily complexes were surely exerting profound influences on one another, shaping the many elaborations which took place, during much of the Classic period.

Comparisons with data outside Mesoamerica have still another significance. A glance at the index of Frazer's monumental "Golden Bough" will show that many of the water associations, as recognized herein, reappear in other parts of the world (Frazer, 1935, vol. 12, pp. 427–428, 518). The precise significance of this to the present study is uncertain, and it is unnecessary here to speculate at any length about the relative importance of diffusion, parallelism, or convergence in the historical development of these ideas. The imitative aspects of the various types of rainmaking are pronounced, however; and one could actually regard the world-wide occurrence of comparable beliefs as an indication of the "naturalness" of the association of containers, hands, and the other objects with water in Mesoamerica. To this extent, it may be legitimate to regard Frazer's material as a corroboration of the identifications made in the present study; at the least, they give it a broader perspective that is of value.

The exact significance of much of the data which have been presented remains unclear; many of the proposed identifications of falling water occupy, at best, a doubtful status. One broad fact seems to have been established, however. Closely connected concepts regarding the production of rain were widely shared in Mesoamerica. The specific forms frequently varied, and they would sometimes combine into highly elaborated complexes that would set off from one another neighboring areas or even sites within the same culture. But the underlying, ever-recurring patterns were remarkably consistent.

APPENDIX A

NONARTISTIC DATA AND CURRENT RECONSTRUCTIONS

DIRECT WATER ASSOCIATIONS: PHYSIOLOGICAL DATA

A case can be made for the reality of a number of the water associations, on the basis of ethnological, documentary, or epigraphic data. It is true that the arguments vary considerably in strength. Nonetheless, as a result, additional support is given to the identifications of streams of falling water, which have been made on artistic grounds.

A passage from Thompson, in regard to the nature of the Maya sky god Itzamna, may, perhaps, be related to several of the direct water associations (Thompson, 1939, pp. 152–154). Following Lizana, Thompson quotes the remark attributed to Itzamat Ul (Kab Ul, Kat Ul): "I am the *itz* (dew or substance) of heaven, I am the *itz* of the clouds." Several alternative or reconstructed forms appearing in Itzamna's names (*itz, t'ul, kab*) refer, according to Thompson, to "liquids that exude drop by drop." Definitions in the Pío Pérez and Moran dictionaries are cited. *Itz* signifies "milk, tear, sweat, semen, resin, or gum for coagulating from trees, bushes, and some grasses." *Kab*, as well as meaning "hand," signifies "froth, gravy, soup, liquid of anything, milk, juice," and, in compounds, "resin of trees, honey, tears, scorpion's poison, drool from the mouth, and rust." *T'ul* is defined as "water to pour off the garment of a person that has had a wetting," hence, according to Thompson, dripping water.

Thompson further points out that Itzamna, as well as the Chaacs or rain gods, was invoked in a rainmaking ceremony, described by Landa in connection with the mouth Mac (Thompson, 1939, p. 152;

Landa in Tozzer, 1941, pp. 162–164). In this ceremony fires were extinguished with pitchers of water. "They did this," according to Landa, "so as by means of it to obtain a good year of rains for their grains." Thompson goes on to suggest an identification of Itzamna with the sky monster and a connection with water symbols in Maya art. This suggested linkage, while of great importance, need not concern us at the moment. The significant conclusion for the present discussion is that Itzamna was intimately connected with rainfall. According to Thompson, Itzamna's rain was of the scanty, dripping variety which is to be associated with drought and disaster, rather than being a heavy fall of water.

Another hypothesis should be mentioned as a possible alternative to this last interpretation by Thompson, although the two are in no necessary conflict. Could not the dripping or exuding liquids refer directly to the physiological secretions upon which Maya ideas of the production of rain were based, rather than to the character of the rainwater itself? As has been indicated in a preceding section, many of the direct water associations seem to derive, by analogy or sympathetic magic, from fluids actually secreted by living beings. If this argument is followed, the *itz* or *kab* of Itzamna could refer to the drool from his mouth, tears from his eye, milk from her [32] breast, semen from between his legs, or sweat from his body. Itzamna's statement, "I am the *itz* of the clouds," is in keeping with such an interpretation.

Elsewhere, Thompson (1950, p. 282) discusses additional data with possible bearings upon the direct water associations and balanced water and vegetation. The root *ak*, Thompson points out, refers in Yucatec Maya to vegetation turning green and to the idea of humidity. Among the many constructions into which the word enters, *akci* (to pour water), *akzah* (to urinate), and *akyaabil* (the rainy season), as well as possibly the meaning "tongue" for *ak*, may have significance for the present problem. The associations of rainwater with vessels, the region between the legs, and possibly the mouth are suggested. The exact bearing of these terms on the water associations, if any, cannot be determined. Nevertheless, the tendency toward punning and rebus writing that pervades the oral literature and hieroglyphs of the Maya offers support to the belief that some connection may be involved (cf. Roys, 1933; Thompson, 1950, pp. 46–48). The *ak* words may have served as a stimulus to the creation of concepts that would link containers, the region of the genitals, and the mouth with rainfall. Conversely, the Maya may have taken recognition of preexisting religious concepts by increasing or giving new meanings to the *ak* words.[32a]

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[32] Duality of aspect, including the changing of sex, is one of the outstanding characteristics of the Maya deities (Thompson, 1950, p. 13).

WATER FROM CONTAINER

Only a few of the direct water associations can properly be said to receive unequivocal support from documentary and ethnological sources. In many cases, a certain amount of reconstruction and interpretation is required by the investigator to connect the data with the association in question. But the existence of a Mesoamerican belief that rain is poured from a container is clear and unmistakable. Thus, of the Aztec rain god, Tlaloc, the *Historia de los Mexicanos por sus Pinturas* states:

> Of this god of water it was said that he had his dwelling of four apartments, in the middle of which was a large courtyard, where stood four large earthern pans full of water. In one of these pans the water was excellent, and from it the rain fell which nourished all manner of corn and seeds and grain, and which ripened things in good season; from the second rained bad water from which fell cobwebs on the crops, and blight and mildew ensued; from another fell ice and sleet; when from the fourth rain fell nothing matured or dried. This god of rain water created many servants, small of body, who were in the rooms of the aforesaid house, and they held money boxes,[33] in which they caught the water from the great earthern pans, and various rods in the other hand; and when the god of water sent them to irrigate any especial places, they started off with their boxes and sticks, and let fall the water where they were directed, and when it thunders the noise is caused by their striking the boxes with their rods, and when it lightnings it comes from within these boxes. [Phillips, 1884, p. 618.]

The manuscript adds:

> Being questioned as to the matter of thunder and lightning, they said that the Water-god had many subjects made by him, who carried each one an earthern money-jug and a rod, and that from these earthern vessels they cast down the rain, and that the thunder was when they struck the vessels with their rods, and that the lightning flashed from these vessels. [Phillips, 1884, p. 638.]

The modern Tlaxcalans of Mt. Malintzi share somewhat similar beliefs, holding the concept of a female mountain spirit, Malintzi, who lives in a cave consisting of vast galleries.

[32a] That the Maya would not be alone in basing double meanings on the water associations is indicated by the rebus approach to certain Mexican place names. From the tribute lists of the Mendoza Codex we find the following place names displaying associations pertinent to the present study (plate references are to Peñafiel, 1885): *Acolman*, water at wrist (pl. 2); *Achiotlan*, water from mouth, death (pl. 2); *Alahuiztlan*, water from hand, object in water (pl. 3); *Amaxac*, water between legs (pl. 3); *Atlicholoayan*, water from (animal) hand (pl. 4); *Chictlan*, water from hand, object in water (?) (pl. 12); *Teocuitlatlan*, water from object in hand, glyph in water (i.e., as source of stream) (pl. 26); *Tlaahuililpan*, water from container (pl. 29).

Rather than being random, it would appear, the precise way of combining rebus elements in the place names was patterned by religious concepts. Seemingly the water associations were formalized constructs in Mexican thinking and were quick to be utilized in situations having no connection with basic beliefs regarding rainfall. However it is recognized that the ideas combined in place names may occasionally have become a spur to further religious speculation.

[33] "Alcancia, literally, a money-jug of earthernware" (Phillips, 1884, p. 645, No. 12). Pottery vessels, in other words, are held by these dwarfish servants, the tlaloque.

> Here are arranged in lines hundreds of *ollas*, or water jars, in which she brews her hails and rains and where she stores fruits and grains and seeds. There are, it seems, many different kinds of hail, each consuming its special kind of plant product. The hailstones are animated and hungry; when they are sent forth by Malintzi they devour, each its own seed or fruit or grain, and carry back to the cavern and store in the great ollas. [Starr, 1901, p. 117.]

The keeping of rain and hail in jars and the presence of highly specialized types of precipitation correspond rather closely to ancient Aztec beliefs. The animated hailstones, sent forth by the mountain spirit, are reminiscent of the Aztec tlaloque. The pouring of rain from containers is not recorded, however. A somewhat comparable cave-dwelling goddess is closely associated with water jars, water snakes, springs, thunder and lightning, and fierce rainstorms in Huichol belief (Zingg, 1937, p. 340).

In the cave or mountain home of Lightning, according to beliefs of the present-day Zapotec of Mitla, jars contain clouds, or clouds and hail and wind, or clouds and hail and tempest (Parsons, 1936, pp. 212, 213, 330, 331, 332, 538).

> Lightning . . . got out a few clouds. He kept them in two large jars. . . . The clouds mounted to the sky. . . . He mounted into the sky and gave a cry, and the clouds understood and it began to rain. . . . The next day when they woke up Lightning told the little boy to take out a few clouds. "I am going," said Lightning, and with the clouds he went up to the sky. He told the little boy to keep the jars closed, but the little boy left them open. Lightning saw that the clouds were coming up and up into the sky. "What is he doing?" said Lightning and he returned on a run and stoppered the jars which were only half full. He said to the boy, "All these clouds have made a lake. Now there will be a very heavy downpour and hail." And he got out a little wind cloud, and a whirlwind came out, a strong wind. Lightning began to cry out for the rain to pass over. It rained for about four hours, then Lightning prevailed and the heavy rain ceased; but the storm had washed the pueblo into the river. [Parsons, 1936, pp. 330–331.]

Lightning, according to another Mitla tale,

> had three jars . . . . in which he kept the clouds, hail, and the wind, well covered up. . . . He said to the little boy, "Go to Chipaltsingo where it is dry and open this jar, and they will have rain." And the little Lightning went, and the clouds came out, and the fields were refreshed. When enough rain fell, Lightning called out, and the clouds came back into the jar. Another time the big Lightning sent the little one to another pueblo, where by mistake he opened the jar of hail and it destroyed their milpas. [Parsons, 1936, p. 332.]

In one version the jars remain at the home of Lightning, whereas in the second, one of the jars is brought to the desired place where it is opened. The boys who work for Lightning, especially the "little Lightning" of the second version, correspond to the minor Aztec tlaloque. The pouring of water is, again, not recorded, although the issuance of clouds from the jars seems to be a related idea.

A vivid picture of the work of the rain god Chac is given in a folk tale of the Mayas of San Antonio, British Honduras. Chac has a human servant, who corresponds to the little orphan boys working for Lightning in Mitla folklore.

> The man thought that he would like to play at being Chac, so he watched how Chac dressed himself when he went out to do his work. One night when Chac was asleep, he took his clothes, his windbag and water-calabash . . ., his axe and his drum. Then he went out and let loose the winds. The winds went screeching off, and the man, who had not the strength of Chac, could not shut them up again. A terrific storm rushed down upon the world. Then he took the calabash to make rain. Now, by pouring out four fingers of water, Chac used to cause a heavy rain. The man upset the whole calabash, and torrents of rain poured down on the earth. He began to beat on the drum, which causes the thunder, but when he tried to stop it, he couldn't. In his effort to stop the thunder the rain and the winds, the man fell into the sea. When Chac woke up, there were no signs of his clothes and his instruments, and the man had disappeared too. He went to one of the other Chacs, for they are very numerous, and borrowed his clothes and his windbag and went out to stop the rain, and put the winds back in their bag and stop the beating of the drum. [Thompson, 1930, p. 149.]

Functions of Chac's paraphernalia are for the most part clearly explained by this tale, and his ax is the lightning (Thompson, 1930, pp. 60, 61). Rain is poured from a calabash container.

The present-day Mayas of the subtribe of X-Cacal, east-central Quintana Roo, have a complex body of beliefs pertaining to rainfall.

> The chaacs, also called *ah-hoyas* (the sprinklers) . . . control the clouds and bring the rain . . . They ride across the sky on very thin horses, carrying the rain water in a special calabash called *zayab-chu* (fountain calabash). Not more than a part of the contents of the calabash is ever used up, and it is said that if all the water in the calabash should ever be poured out, a universal deluge would occur and the world would be completely inundated. [Villa, 1945, p. 102.]
>
> The chaacs are numerous and form a hierarchy. First come the four *nucuch-chaacs* (great chaacs), who stand in the sky at the four cardinal points. [Villa, 1945, p. 102.]
>
> Besides these cardinal chaacs are an indefinite number of others. Each one has the duty of producing some of the various kinds of rain or some of the many meteorological phenomena that accompany it. Ah-thoxon-caan-chaac (distributor-sky-chaac) produces fine persistent rain; Bulen-caan-chaac (flooding-sky-chaac) brings heavy downpours; Hohop-caan-chaac (lightning-sky-chaac) causes the lightning; Mizen-caan-chaac (sweeper-sky-chaac) goes about cleaning the sky after the rainfall. [Villa, 1945, p. 102.]
>
> The east has greater importance than any of the other cardinal points. It is there that the rain gods assemble to make their decisions before going out to water the earth, and it is from that direction that the first thunders sound to announce the coming of the rains. [Villa, 1945, p. 155.]

The pouring of water from a container and the existence of specialized types of rainfall are, again, to be noted. Highland Guatemalan folklore offers comparable features. At San Antonio Palopó, the red rain god is believed to pour heavy rain from his large gourd, whereas the white rain god sprinkles drizzling rain from his small gourd (Redfield, 1946, p. 134).

By the modern Mayas of Chan Kom, Yucatan, the chacs are commonly called "the sprinklers" (*Ah-hoyaob*). One of the chacs, x-thup-chaac (least of the chaacs) makes rain fall in torrents when he passes over the milpas.

> He carries a small calabash known as zaayam-chu ("inexhaustible water-carrier"). This calabash is mysteriously connected with the cenotes. As the x-thup-chaac rides over each cenote, with a roar the water from the cenote passes up into the air to fill his calabash again. [Redfield and Villa, 1934, p. 115.]
>
> The chaacs are visualized as old men who ride on horses which are seen as clouds. Each rider holds a gourd vessel containing the waters of the rain, and brandishes a machete-like object known as lelem, which produces the lightning. [Redfield and Villa, 1934, p. 116.]

In the cha-chaac rainmaking ceremony, the impersonator of the chac carries a small calabash (Redfield and Villa, 1934, pp. 115, 142).

Ceremonies to the chacs and Itzamna, and to the lightning (Macon), performed at the time of the Conquest by Yucatecan Mayas (Tozzer, 1941, pp. 162–163) and Chol-speaking Lacandones (Tozzer, 1913, p. 504), probably symbolize the pouring of rain from containers. In these ceremonies fires were quenched with water poured from jars by men who, among the Lacandones at least, personified the deity. It is stated that the purpose of the Yucatecan ceremony was to obtain plentiful rain. Water is emptied from containers in rain-bringing ritual among the present-day Zapotec (Fuente, 1947, pp. 482–483).

From the preceding passages, it is possible to abstract certain Mesoamerican beliefs more or less directly connected with the association of rainwater and a container. (1) Water is frequently poured directly from the container. (2) Different vessels contain different types of precipitation; beneficial rain, harmful rain, and hail, among others. Clouds and wind may also be stored in containers. (3) An indirect association sometimes exists between a vessel and the rain. Thus, clouds issue from the container, and the rain, in turn, is produced by the clouds. Or rain, along with other types of precipitation, is brewed within one set of vessels but transferred to a second set, from which the water is actually poured. (4) Other objects—rods, axes, and drums—are sometimes used to produce thunder and lightning. (5) The rainmaker who holds the container is commonly conceived of in anthropomorphic form. (6) A rainmaker is frequently assisted by helpers, who may, through inexperience or specialization of function, cause destructive floods.

The third of these beliefs—the emergence of clouds from a container and the descent of rain from the clouds—might conceivably be applicable to the design on Stela 1, Izapa (pl. 75, *a*). In discussing the elaborate scrollwork surrounding the container on the back of the figure, it was suggested that clouds may be shown as the immediate source of the falling water (p. 297).

WATER FROM MOUTH

Surprisingly enough, in view of the impressive artistic data, the writer has been able to find but little ethnologic evidence which would indicate the mouth to be directly associated with rainwater. Modern Zapotec rain-bringing ceremonies form an important exception, however. Beverages are sprayed from the mouth, the supplicant then asking for the type of water which is desired. Liquids are again sprinkled from the mouth later in the ceremony, for the specifically stated purpose of causing the saint to send the rain (Fuente, 1947, pp. 482–483).

Certain hieroglyphs or examples of picture writing show water issuing from the mouth, although rainfall may not be intended. Thus it may be of little immediate significance that a Nahuatl place name, *Atlhuelic*, depicts water emerging from a human mouth (Peñafiel, 1885, p. 61). Seler has written at length about the *atl-tlachinolli* symbol—a design, usually composed of a fire strip intertwined with a stream of water, which frequently leads from the mouth. The symbol is considered to signify war (Seler, 1902–23, vol. 3, pp. 221–304).[34] A connection with the theme of death and destruction seems probable. Seler also speaks of those "great reservoirs of water," the mountains, whose "jaws . . . must spit water" (Seler, 1902–23, vol. 3, p. 527; Thompson and Richardson, 1939, vol. 3, pp. 221–304). In the Mexican codices, mountains are sometimes shown with streams of water issuing from the conventionalized mouths at their bases. The birth of rivers in the uplands may be recalled in this connection, as well as the intimate association of the rain-bringing Tlalocs with mountains (Sahagun, 1932, pp. 45, 64, 72–73, 133–135). In Maya sculpture, Thompson notes an occurrence of one of his glyphic water symbols—three circles in a triangular arrangement—below the mouth of the moan bird (Thompson, 1950, p. 277, fig. 20, No. 17). Comparison should be made to the placing of a yax sign below the mouth of the same bird (associated with Entry 49) and to figure 23, *a*.

WATER FROM EYE

The case is convincing for the association of water and the eye. Some years ago, in an essay on the weeping god, Joyce brought together artistic and ethnological data which indicate the belief in a sympathetic bond between tears and rainfall. The concept was traced from Mexico and the West Indies to Chile and northwestern Argentina (Joyce, 1913). Among the ancient Aztec, child sacrifice took place during the ceremony in the month of Atlcoualco (want of water). According to Sahagun, the presiding deities were Tlaloc, the rain god; Chalchihuitlicue, the goddess of water; and/or Quetzalcoatl, the wind god. Sahagun states that the children were born in litters, and

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[34] Thompson and Richardson, 1939, vol. 3, pt. 2, pp. 1–48. Designs illustrated by Seler showing the association of this symbol with mouths are his figures 8, 67, 71; many others exist.

> wherever they passed the people were weeping. . . . If the children cried very much when they took them to the place of sacrifice, those who were with them were glad, because they considered it as a sign that there would be abundant rain. [Sahagun, 1932, p. 73.]

And elsewhere:

> If the children who were to be killed cried a great deal and shed many tears they were glad of it, for they took it as a prognostication of a great deal of rain for that year. [Sahagun, 1932, p. 51.]

The more extended version of Sahagun reads:

> And if the children went crying, their tears coursing down and bathing their faces, it was said and understood that indeed it would rain. [For] their tears signified rain. Therefore [men] were joyful; thus were their hearts at rest. Hence they said: "Verily, soon rain will set in; yea, now soon we shall have rain." [Anderson and Dibble, 1950–52, bk. 2, p. 44.]

A passage from Sahagun directly associates tears with a different form of precipitation. In the legend telling of the departure of Quetzalcoatl from Tula, it is stated:

> Thereupon he [Quetzalcoatl] looked toward Tula, and then wept; as one sobbing he wept. Now he shed two hailstones as tears over his face. . . . [Anderson and Dibble, 1950–52, bk. 3, p. 32.]

Among the present-day Maya of Chan Kom, the tortoise is particularly associated with the chaacs or rain gods, as it inhabits their homes in the cenotes. Redfield and Villa state:

> The tortoise is bound to man by a curious sympathy. When the woods are wet and the earth is moist, then the tortoise is not seen. But when drought has dried the water-holes and the land is thirsty and the maize may fail, then the tortoise walks abroad. He takes the paths that men take, and the villager meets him on his road to the milpa. All have thus encountered him, pausing in the burning sun, his shell dry and hot, but his eyes filled with tears. The tortoise weeps for men and it is said that his tears draw the rain. [Redfield and Villa, 1934, p. 207.]

These data strongly suggest that the widespread principle of sympathetic or imitative magic is operative. Nevertheless, the human emotions of sorrow and pity may enter into these beliefs. Perhaps the tears of the children and the tortoises evoke mercy in the supernaturals, thereby causing them voluntarily to send rain. Clearly, there need be no necessary conflict in these explanations, as magical and religious practices may be blended. In any case, an association is indicated between tears and rainfall.

A more direct connection may also exist between the eye and water. Joyce believes the Maya day sign Ik to "suggest an eyelid with one or more tears falling from it" (Joyce, 1913, p. 371, fig. 9, *b–e*).[35] As Thompson also points out, this T-shaped element recurs in the name glyph of God B, who presumably is the anthropomorphic rain deity, Chac; additional evidence indicates that the symbol has aquatic connotations (Thompson, 1950, pp. 73, 133, 277). All this suggests that in the Maya hieroglyphs rain may actually be shown descending from the eye of the god.

Additional glyphic symbols which Thompson believes to have pluvial associations occur in the eye of several supernatural beings of the Maya. One of these elements, a spiral, is frequently placed in the eyes of the moan bird, God B, and the Long-nosed God (Thompson 1950, pp. 114, 277–278, fig. 20). It will be seen to occur in the eyes of many of the water producers illustrated herein. Another water symbol recognized by Thompson, three circles in a triangular arrangement, occurs in the eyes of the moan bird (tun glyph) and Goddess I (Thompson, 1950, p. 277). If the identification of these elements as water symbols is correct, additional weight is given to the association of rainfall with the eye and tears.

WATER FROM BREAST

With the exception of what Thompson so aptly refers to as Itzamna's "cryptic remark," suggesting a possible association of milk (*itz*, *kab*) and the clouds, the writer knows of no ethnological or documentary data which would connect the female breast with rainwater.

WATER FROM BETWEEN LEGS

In addition to the complex of ideas connected with *itz* (semen) and *akzah* (urine), another chain of associations in Maya language and religion indicates a relationship to rainfall. As the data, concerning the *bul-eb* bug, also seem to relate to the presence of the day sign Eb in water on Dresden 74, they are taken up in that connection (see "Glyph in Water," below).

WATER FROM BODY (PORES?)

Little if any truly convincing evidence exists for a linkage, in Mesoamerican beliefs, between sweat and rainfall. One of the meanings of *itz* may constitute an exception. Then too, the concept that water falls from the body does occur. Villa, writing of the present day Maya of X-Cacal, Quintana Roo, states:

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[35] Joyce (1913, fig. 8, 10–13) identifies several representations from Mexico and Central America as showing the weeping eye. These have not been tabulated, partly because doubt may sometimes exist if tears, or, e. g., plucked out eyes are shown.

> Sometimes the chaacs [who pour rain water from calabashes] are accompanied by the Virgin Mary (*Cichpan Colel*), who rides on a fat black horse. She carries no calabash, but water falls in torrents from the body of her horse. There is no danger of floods from this water, however, for it collects in subterranean channels leading to two cenotes, unknown to men, that can never be filled. [Villa, 1945, p. 102.]

As related above, the chaacs are believed by the X-Cacal Maya to ride across the sky on thin horses, while at Chan Kom the chaacs "ride on horses which are seen as clouds" (Redfield and Villa, 1934 p. 116). Tozzer (1907, p. 157) records that among the Yucatecan Maya the lightning is the whip with which the rain gods lash their horses. One is forcibly reminded of Tzimin Chac, the "Thunder Horse" which Cortez had left with the Itza at Lake Peten on his march to Honduras and which in later times was worshiped in the form of an idol (Morley, 1937–38, vol. 1, pp. 29–30, 33). More to the point of the present discussion, it is possible that the emergence of water from the body of the Virgin's horse finds a prototype in the secretion of sweat. This is speculative but, if correct, could suggest that the exuding drops referable to Itzamna's names relate to physiological functions rather than to the quantity or character of the rainwater. For the rain is described as falling in torrents from the body of the Virgin's cloud-horse, not oozing from it.[36]

It has been assumed up to this point, on the basis of the apparent Maya tendency to generalize in terms of the various liquid-secreting functions of the body, that when rain falls from the body, sweat serves as its prototype. This view may be erroneous. A present-day Chorti belief suggests a different explanation for the phenomena of rain falling from, or close to, the body. The Chicchans are mythical serpents, often associated with the sky. Wisdom (1940, p. 394) notes: "Cloudbursts and violent rainstorms are caused by the swift passage of a female Chicchan across the sky, the impact of her body against the clouds causing the water to fall." Such a concept could perhaps be manifested in designs on the order of Entry 25, Tulum, or in the modern X-Cacal belief in torrents of rain which fall from the body of the Virgin's horse.[37]

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[36] The danger of regarding post-Spanish beliefs as corresponding in detail to aboriginal concepts is recognized. The transferrence of rainmaking qualities to the horse, may however, find a ready explanation. New, powerful, and centaurlike with its rider, the horse might easily be regarded with supernatural awe. Arquebuses fired from the back of the horse during the Conquest perhaps suggested thunder and lightning (Morley, 1937–38, p. 29). Could the thundering hoofs of galloping horses have contributed to this association? Landa's description of the tapir may also prove enlightening. "They call it *tzimin*," he states, "and from these they have given their name to horses." Again, "It [the tapir] is an animal very fond of water . . . and has . . . a small proboscis on its snout in which it holds water" (Landa in Tozzer, 1941, p. 203). Possibly the tapir's truck served as a prototype for the long proboscis of the Long-nosed God (but cf. Tozzer and Allen, 1910, pp. 353–354); if so, the aquatic associations of this animal would presumably be increased. In any event, some tendency to connect the tapir with water is evidenced by Landa's informants. Possibly these ideas, along with the tapir's name, became transferred to the horse in post-Spanish times. Clearly, all this is speculation; and it does not bear crucially on the direct water associations, with which the paper is primarily concerned. While on the subject, however, one further quality of the horse should perhaps be noted—its tendency to sweat freely, its coat thereby becoming covered with a heavy lather.

WATER FROM HAND

Nonartistic data of uncertain significance may indicate an association between water and the hand. It has been noted that Maya *kab* relates to exuding or dripping liquids, as well as meaning "hand." Following Lizana (1893, p. 5), Thompson notes that a representation of Itzamna's (Kab Ul's) hand was kept in a temple at Izamal and that the name Kab Ul signifies the "working hand," "the hand that works;" Ah Kabul would be "he who works with his hands" (Thompson, 1939, pp. 50, 153; 1950, p. 266). According to Thompson (1939, p. 153), "the association with the hand might well have been secondary, arising from the double meaning of the word." A slightly different hypothesis, which relates Thompson's data to the direct water associations, is offered. In his manifestation as Kab Ul, Itzamna was believed to sprinkle water from his hand. Both meanings of the word *kab* would thus be reflected in his activities.

Among the modern Maya of both Chan Kom and X-Cacal, the chaacs are known collectively as *Ah-hoyaob*, "the sprinklers" (Redfield and Villa, 1934, p. 115; Villa, 1945, p. 102). The name suggests the possibility that water is sprinkled by hand from the calabashes which they carry as they pass through the sky, although no definite statement to this effect is given. In the *cha-chaac* ("bring-rain") ceremony observed at Chan Kom, an altar was sprinkled with balche from the hand while a frog impersonator imitated the sound of thunder with his voice and the flash of lightning with his wooden machete (Redfield and Villa, 1934, p. 142, pl. 13, *b*). Redfield and Villa remark, "This sprinkling of balche, so much used in all these agricultural ceremonies, is the devise whereby things and persons are safely conveyed from the world of the secular to that of the sacred, and back again." In this case, however, the sprinkling of balche is coincident with other actions which patently imitate thunderstorms. There seems every reason to believe, therefore, that the sprinkling of balche is a form of sympathetic magic, and that, whatever else its function, it may duplicate a specific action of the rain gods. This is particularly true inasmuch as in the *cha-chaac* ceremony at the nearby village of Piste, balche spilled from a swinging gourd is regarded as a symbol of rainfall (Redfield and Villa, 1934, p. 143).

In Quetzaltepeque, Guatemala, modern Chorti Maya believe that the activities of an official known as the *capitan* and his wife have a connection with the fall of rain. Of the wife Wisdom states:

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[37] It may merely be coincidence that heavy downpours are associated with female Maya deities in the cases of the Chicchan, the Virgin, and Goddess I. Torrents which fall from the Virgin's horse are not harmful, although this could reflect a post-Conquest rationalization which put the female rainmaker's water in accordance with the Virgin's attributes of mercy.

> One of her chief duties is to sprinkle the floors of her houses with water every day during the year, and especially when rain is desired, as this is believed to bring on the rain and to keep it coming. [Wisdom, 1940, p. 376.]

Among the Cora, the Morning Star is believed to throw blessed water upon the earth. He may do this from the hands, although in the corresponding ceremony water is sprinkled from an orchid (Lumholtz, 1902, vol. 1, p. 525).

Data supplied by Sahagun about ancient Aztec beliefs and ritual practices serve to link the Tlalocs with precipitation which may be scattered from the hand:

> To him [Tlaloc] was attributed the rain; for he made it, he caused it to come down, he scattered the rain like seed, and also the hail. [Anderson and Dibble, 1950-52, bk. 1, p. 2.]

Of O pochtli, one of the Tlalocs:

> And when his feast was celebrated . . . they strewed toasted [pop-] corn grains like hailstones, or like scattered dice. [Anderson and Dibble, 1950–52, bk. 1.]

The passages suggest that the scattering of popcorn and, perhaps seeds was associated symbolically with the fall of precipitation.[38] Even more significant, however, is the fact that it is clearly stated that Tlaloc scattered the rain, although whether from his hand or from some other object is not made clear.

Thompson has isolated a number of Maya hieroglyphs which bear upon the problem of the association of water with the hand:

(1) A glyph, probably indicating completion, shows circles falling from a hand with fingers held down. Thompson believes the circles to indicate drops of water, scattered from the hand. In this case, however, his interpretation cannot properly be regarded as evidence independently supporting the association, advanced in this paper, of water and the hand. For, as Thompson points out, he originally had regarded the glyph as showing scattered grains of maize but changed his opinion on the basis of artistic representations, gathered by the writer, which form an important part of the present study (Thompson, 1950, pp. 193–194, fig. 33, Nos. 4–8).

(2) Independently of the present writer, Thompson has isolated the spiral as a water symbol in the Maya hieroglyphs. It is held in the hands of God B in the Dresden Codex and appears in the hand in sculptured glyphs of unknown meaning (Thompson 1950, pp. 114, 277–278, fig. 20, Nos. 21, 22, 25, 26). In the latter, circles appear in connection with the spirals, suggesting drops of water and forming

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[38] Compare objects, identified by Caso (1942, p. 134) as seeds, falling from the hands at Tepantitla (Entry 4). Compare further the configuration of balanced water and vegetation.

a possible link with the completion (?) sign referred to above. The effect of water rolling out from the hand is well achieved in Thompson's figure 20, No. 25, where falling seeds could scarcely be indicated by the spirals.

(3) In the Dresden Codex, a glyph showing an inverted hand with "peculiar" infix occurs exclusively in almanacs relating to rain. Beings with which it is associated are God B, Goddess I, and a probable king vulture. The glyph in question occurs in the seven almanacs on Dresden 29c–41c, 41b–43b, 65b–69b, 42a–44a. Thompson concludes:

> Although this glyph does not appear in every almanac pertaining to rain, its close association with God B and his colleagues in divination for rain, and its absence from almanacs which deal with both rain and lightning storms suggest that when used with the given affixes, it conveys the idea of giving rain to mankind. The reversed position of the hand suggests the act of donation. [Thompson, 1950, p. 267.]
>
> Again, it would be premature to suggest a Maya equivalent for the glyph at this time, although the possibilities of *tz'a*, "to give," and *matan*, "a gift" or "grace or mercy received" are worth bearing in mind. [Thompson, 1950, p. 267.]

The presence in two of the almanacs of Goddess I, universally described as a deity of floods and destruction, conveys the suggestion that more than gifts and mercy were involved. Rather, the present writer would offer the hypothesis that the down-turned hand had an immediate association with rain, i. e., water was believed to be poured or sprinkled from it. In Thompson's figure 42, Nos. 65 and 66, certain affixes could be intended to show an object spilling out from the hand. It is clear, in summary, that an association of some sort between the glyph and rainfall is indicated, although the precise role in this of the hand per se remains a matter of speculation.

WATER FROM OTHER OBJECT HELD IN HAND

The documentary sources make it clear that among the Maya the sprinkling of water was sometimes accomplished through the use of an object held in the hand. Landa refers to this object as an aspergillum, Cogolludo as a hyssop, Lopez Medel as "a kind of sprinkler," and the Relación of Valladolid as "a hyssop with many tails of vipers and poisonous snakes tied to it" (in Tozzer, 1941, pp. 105, 224, 148). Landa's account indicates that a bone was wet in water and used for purposes of anointing; Herrera refers to "water which they kept in a bone" (in Tozzer, 1941, pp. 105, 102). The descriptions by Landa, Cogolludo, and Herrera refer to baptismal ceremonies. A fire-walking rite, in which wine was sprinkled on the coals, is the subject of the quotation from the Relación of Valladolid. The latter source seems, moreover, to suggest that sprinkling from the hyssop was a common ritual practice (Relación of Valladolid, in Tozzer, 1941, p. 105).

Tozzer holds that the aspergillum is depicted on pages 100d, 111b of the Codex Madrid; "the triple representation of the rattles . . . shows the movement when shaken." He also suggests that the handles of aspergilla may be known in actual specimens—carved wooden scepters with hollow tops—from the Sacrificial Cenote at Chichén Itzá (Tozzer, 1941, p. 105).

Simpler objects also served as media for sprinkling water. Sahagun describes an Aztec ceremony to one of the Tlalocs, Napa tecutli:

> And when it was his feast day, they spoke thus: "He washeth and batheth men; he shaketh and sprinkleth rain upon them." [For] greatly they importuned [rain] of him.
>
> And also each year they slew a man who represented him, a slave.
>
> They arrayed him [like the god], and he carried in his hand a green gourd vessel, in which was water. With a branch he sprinkled people. [Anderson and Dibble, 1950–52, bk. 1, pp. 20–21, fig. 31.]

The impersonator of the god, who is said to have borne a shield ornamented with water-lily flowers and leaves—

> went sprinkling the people with water, since they had prayed that they might be benefited. [Anderson and Dibble, 1950–52, bk. 1, p. 21.]

In another ceremony having no apparent reference to rainfall, corpses were sprinkled "with corn leaves dipped in clear water" (Sahagun, 1932, p. 126). A partial correspondence is provided by a ritual act among the modern Lacandones, in which balche or posol from the end of a roll of leaves or spoon is spattered into the air (Tozzer, 1907, pp. 122, 129). In one of the accompanying chants, the substitution of *ha* (water) for the balche which is actually sprinkled may help to establish a conceptual association with water (Tozzer, 1907, pp. 129–130, 181).

WATERLIKE DESIGN FROM HEAD

The writer is not aware of any nonartistic data from Mesoamerica which would indicate that water emerges from the head, although such an association seems to be documented, on an ethnologic level, for vegetation (Foster, 1945, pp. 191, 195).

GLYPH IN WATER

In addition to the symbols which display the direct water associations, three or four Maya hieroglyphs have immediate significance to the present study. They derive their importance from the fact that with one exception they occur repeatedly attached to designs which are to be identified, on other lines of evidence, as water. These glyphs are the kan cross, the yax sign, the completion or zero symbol, and the day sign, Eb. The latter is known to occur in only a single representation of falling water but has a prominent position in this one instance.

The occurrence of Eb and a possible zero sign in water on page 74 of the Dresden Codex have long been recognized (Förstemann, 1906, p. 266). In 1913, Spinden (p. 67) identified several designs in Maya art as water and noted the occurrence of glyphs within them. Following Spinden's lead, the writer, in an earlier version of the present paper (1946), brought together a number of comparable designs in which the same glyphs occurred. The signs were at that time identified as yax, kan, and completion by Thompson, who shortly thereafter (1950, 1951) made a detailed analysis of their role as water symbols.

Thompson's arguments are too ramified to be followed at length in this space. Certain important factors merit brief attention, however. (1) The great interchangeability of these glyphs as affixes, especially of yax and kan, with one another and with other aquatic symbols recognized by Thompson. (2) The relationship of yax (green) with the day Chicchan (snake) and the serpent god of number nine; hence its extended association with the Chicchan sky serpents who bring rain in modern Chorti belief. (3) The suggested equation in concept of kan (yellow?) with identical cross-in-circle forms in Mesoamerica and closely linked ideas; turquoise (rain, water, the abode of the Tlalocs); jade (rain, water, Chalchihuitlicue as "she of the jade skirt"); the year and its symbols (the meanings of *tun* and *haab* in Yucatec as jade and rain, the moan bird, the trapezoidal element often worn by the Tlalocs). (3a) The appearance of the kan cross in the headdresses of Tlaloc and Cocijo, the rain gods of Teotihuacán and Monte Albán. (4) The interchangeability—as decorative motifs which presumably have symbolic value—of zero, yax, kan, and other water symbols on the piers of House D of the Palace, Palenque (Thompson, 1950, pp. 276–277). (5) It will be noted that of the above evidences, none has an immediate connection with the thesis presented in the present paper. In addition, however, Thompson stresses the occurrence of kan, yax, and completion (zero) in designs that probably depict streams of water.

This applies not only to art motifs but, according to Thompson, to certain glyphs which have an affix comprised of yax, kan, or completion set within water. In many cases, his water as an affix is the same as his "ring of circlets" symbol (Thompson, 1950, p. 277). In other examples, however, it is more linear and corresponds rather closely to the designs in Maya art which are identified in the present paper as streams of falling water. In the glyphs illustrated by Thompson (1950), one or two examples of completion (zero) occur in such a connection (Thompson's figs. 43, No. 1, and perhaps 36, No. 3 (glyph X of the lunar series)). Here the glyphic element and supposed water give the effect of emergence, together with the head of God C, from the mouth of a "celestial monster" (cf. Entries 24, 28, 49, 55). Yax also appears in conjunction with a design somewhat resembling water as identified in the present study (Thompson's fig. 43, No. 19 ("Ben Ich" rainy sky?)) Kan occurs quite frequently in this waterlike setting (Thompson's fig. 34, Nos. 4, 6 (glyph G1 of the lunar series); fig. 43, Nos. 3, 9, 10, 17, 18 ("Ben Ich" bat, "Ben Ich" rainy sky?)). The shell and bone—other aquatic symbols of Thompson's—also appear in conjunction with the waterlike design as affixes (Thompson's fig. 43, Nos. 8, 15, 16, 22). A final point deserves attention before drawing this discussion of the yax-kan-zero glyphs to a close. In glyph G1 of the lunar series, a hand is held in a position identical to that in which it appears when the spiral, another of Thompson's water symbols, seems to roll from it (Thompson's fig. 20, Nos. 25, 26; fig. 34, Nos. 1, 3–7). Inasmuch as God C, held in the palm of the hand, is elsewhere regarded by Thompson as having aquatic value, this correspondence in position may serve as epigraphic evidence strengthening the direct association of water and the hand.

Of the associations of the three glyphs with falling streams, that of yax is perhaps the most readily explained. Water is commonly shown in the codices as green, and the yax sign is apparently connected with the rain-bringing Chicchan celestial snakes (see under "Serpent," below). The significance of the aquatic association of kan—supposedly meaning yellow—is more elusive, and Thompson has, in fact, suggested that the meaning of the kan cross might have been blue or blue-green, the symbol for yellow being unidentified (Thompson, 1950, p. 252). However this may be, a passage from Sahagun is of considerable interest in associating the colors green and yellow with water and with the hand—a complex of ideas that strongly recalls Entries 50–54 at Yaxchilan (figs. 18, *d*, 19, *a–c*). Speaking of the Aztec goddess of vice, Tlaçolteutl, Sahagun states:

> Evil and perverseness, debauched living—these Tlaçolteutl offered, inflamed, inspired. And likewise she forgave. At her whim, she removed the corruption; she cleansed, she washed. In her hand lay the [cleansing] green and yellow waters. [Anderson and Dibble, 1950–52, bk. 1, p. 8.]

A comparable passage appears in Seler:

> Thus speaks the midwife when four days after its birth she subjects the child to a ceremonious washing: "My son, come to thy mother, thy father, the Lady Chalchiuhtlicue, the Lord Chalchiuhtlatonac . . . enter the water, the blue (*Natlalac*) the yellow (*Tozpalac*), may it wash thee, may it cleanse thee perfectly, may it take from thee the evil which thou hast from the beginning of the world . . ." [Seler, 1901, p. 57; quoted in Anderson and Dibble, 1950–52, bk. 1, p. 8.]

Described as "very precious," the Yellow Waters (Toxpalatl) serve as an Aztec place name (Anderson and Dibble, 1950–52, bk. 2, p. 178).

Although highly suggestive data exist, the significance of the day sign Eb in the stream poured by Goddess I on Dresden 74 is a matter of some speculation (pl. 72). Thompson (1950, p. 81) has associated the name Eb with *yeeb* (mist, dew) and by extension mildew, smut, and the destruction of the crops. The hieroglyph Eb is shown with combined symbols of rain (cauac elements) and death (a prominent jawbone). Therefore, as Thompson remarks, the presence of Eb is appropriate in one of the streams of water on Dresden 74, a scene (presumedly) showing the destruction of the world by a deluge.

Roys has recently brought together data concerning Eb which relate more immediately to the direct water associations. Pointing out the usual meaning of Eb as "stairs" and of *yeeb* or *yeb* as "dew," he adds (personal communication):

> I have run into an insect named *bul-eb*, which is defined as "insecto meador." It lives on the Bacalché tree, and when it swarms, its urine is falling like a drizzle. Sometimes this happens even in the suburbs of Mérida (Pacheco Cruz, 1939, pp. 22–23).
>
> Bul can mean "submerged in a liquid." So I feel now that "eb" means "dew" as much as "yeeb" does. Pío Pérez, however, also defines "bul-eb" as "jarro para sacar agua." [Pío Pérez, 1866–77, p. 33.]

Roys' data are of particular interest because, inferentially, they connect the day sign Eb with the fall of water between the legs and from a jar, as shown on Dresden 74. Again, as in the case of *itz*, *kab*, and *ak* compounds, a conceptual association seems to have taken place, which by the use of double meanings serves to unite somewhat discreet ideas into a closely knit complex.

Some years ago (1933, p. 117) Roys translated a passage from the Book of Chilam Balam of Chumayel, referring to the creation of the uinal, as follows:

> On 2 Eb he made the first stairway. It descended from the midst of the heavens, in the midst of the water, when there were neither earth, rocks, nor trees.

The translation calls to mind the occurrences, especially frequent in Mexican art, of various objects in falling streams of water. Roys writes, however (personal communication):

> If I were doing the Chumayel over again, I think my preferred translation would be "first dew" or "green dew" instead of "first stairway," although the words can also mean the latter. By the way, rain is green in the Dresden Codex.

Roys' alternative translation of "green dew" for the Eb passage [39] offers a suggestive parallel to the repeated occurrence of the yax (green) sign in probable streams of water in Classic Maya sculpture.

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[39] "Ca Eb u mentci yax eb" (Roys, 1933, p. 39).

OBJECT IN WATER

Weapons of war often appear in the *atl-tlachinolli* symbol, mentioned above in connection with water from the mouth.

TLALOC

The aquatic associations of Tlaloc are so well established as to require no additional comment. In Mexico there is no difficulty in recognizing this deity whenever it appears, either in the codices or well into the archeological past. Much the same treatment is given a figure which occasionally is shown in Maya art. It has been traditional to refer to this being as Tlaloc, and it seems reasonable to assume that, although far removed from its probable homeland in central Mexico, the figure has retained its associations with rain and water.

ANTHROPOMORPHIC LONG-NOSED GOD

Data of an artistic nature are abundant which relate the Mayan Long-nosed God (or gods) to water. Spinden's discussion of 40 years ago (1913, pp. 61–69) is still highly valuable in this connection, and it is unnecessary to document the case that at least God B, in the codices, has definite associations with rain. Especially in fairly recent years, God B has usually been identified as Chac, known to be a deity of the rains. Thompson (1939, p. 160) has suggested that a related deity, K, is the anthropomorphic aspect of the sky monster Itzamna. (Cf. Tozzer, 1941, for a summary of various identifications that have been given these long-nosed deities.) In the tables, only full-figure beings are tabulated as the anthropomorphic Long-nosed God, and considerable latitude is allowed the exact shape of the proboscis. It is recognized that isolated heads, classified under different categories, may have important connections with the Long-nosed Gods.

FEMALE WATER DEITY

Like her brother or consort Tlaloc, the Mexican goddess Chalchihuitlicue is known to be intimately associated with water, and her portrayals are readily identifiable. More specifically, she rules over the surface water. The case is quite different for the female water deity of the Maya, Schellhas' Goddess I. Her name has not been established, although a concensus of opinion would perhaps have her a variant of Ixchel, the moon goddess (Tozzer, 1941, p. 10). The moon is strongly connected with water in Mexican belief, although this has not been satisfactorily demonstrated for the Maya (Thompson, 1939, pp. 143–144, 163). A connection with Goddess I has been seen in a legend of the modern Maya wherein an old woman with a water jar, Xkitza, sharpens her fingernails and mutters, "Make my nails and the bones of my fingers grow" (Thompson, 1930, pp. 122, 136). On the basis of codex portrayals, in any event, Schellhas (1904, p. 31) characterizes Goddess I as "a personification of water in its quality of destroyer, a goddess of floods and cloud-bursts." This opinion has gone unchallenged. In Teotihuacán sculpture, the so-called "Goddess of Waters" (Entry 6) may actually represent a female water deity. Note the occurrence of wavy lines or comparable symbols for water on the skirt of all three beings, Chalchihuitlicue (pl. 74, *a*), Goddess I (pls. 72, 73, *a*), and the female of Teotihuacán.

BLACK GOD (M, B)

Several black gods are present in the Maya codices, the most prominent of which is Schellhas' M. A wide variety of attributes have been assigned this deity. Traditionally, he has been identified as Ek Chuah, the god of traveling merchants and cacao [40] (Tozzer, 1941, p. 107), with warlike characteristics sometimes being emphasized (Schellhas, 1904, p. 36). Tzultacca, a Kekchi god of the forest, animals, and water, is said to be especially venerated by travelers (Sapper, 1897, pp. 271–272); this vaguely suggests a connection of God M with water. Especially in the Madrid codex, moreover, God M seems frequently to merge in many features with God B. Here a deity with characteristics traditionally ascribable to God B has the drooping lip of M and an eye that duplicates God M's name glyph (Thompson, 1950, p. 76, fig. 13, Nos. 20–23). Schellhas (1904, p. 37) early noted the possibility that a black variant of God B was a deity of the storm.[41] The nature of the one or more black gods which appear in the tables is anything but clear-cut, yet some fundamental connection with water may be indicated.

MISCELLANEOUS ANTHROPOMORPHIC FIGURES

Various deities or human figures which are not generally regarded to have strong affiliations with water do, nevertheless, occur in connection with the water associations. Examples are the Mexican Xochipilli (Borgian 57, perhaps Fejervary-Mayer 37) and God N of the Maya (Entry 58).

FROG

Frogs and toads are generally thought to have a "natural" connection with rainfall. The frogs' role as the musicians of Chac in the lowland Maya area and its connection with Tlaloc in Mexico are discussed by Thompson (1930, pp. 62, 148–149, 150); attention has already been called to the croaking frog impersonators in the Maya *chac-chaac* rainmaking ceremony. Frogs and snakes were kept in a pool at the feet of an image of Tlaloc and during a dance in the god's honor were caught in the mouth and swallowed (Sahagun, 1932, p. 147). On page 12b of the Madrid Codex, God B is pictured with the legs of a frog. A ring of circlets—another of Thompson's water symbols—appears on the forehead of the uinal glyph, which is clearly derived from a frog prototype (Thompson, 1950, pp. 144, 277).

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[40] Thompson (1950, p. 76) disagrees with the identification of God M as Ek Chuah, holding instead that M is primarily a deity of hunting.

[41] In modern Maya folklore, Chac "dressed himself in his black clothes" when about to go to work (Thompson, 1930, p. 128). Mexican Tlalocs are often shown as black (Sahagun, 1932, pp. 40, 45).

SERPENT

The snake, too, is generally believed to have an obvious association with water. It is a commonplace to regard the sinuous motion of the snake's body as symbolic of waves. More to the point, a sizable number of Mesoamerican beliefs have been recorded which directly connect the serpent with surface water, rain, and lightning. The subject is much too involved for adequate discussion here, but a few stray facts regarding the relationship of snakes to the anthropomorphic rain deities of the Maya and Mexicans may be noted. In the Maya codices, the serpent, God B, and water are frequently shown together (Tozzer and Allen, 1910, p. 314). As giant celestial snakes or as partly anthropomorphized serpents, the Chicchans are rain and thunder deities of the present-day Chorti (Wisdom, 1940, pp. 392 ff.). It is interesting in this connection that evidence linking the Maya day sign Chicchan (snake) with water symbols has been presented by Thompson (1950, pp. 45, 75, 135, 276, 278, 290). In modern Zoque belief, snakes serve as the whips of the thunderbolts (Cordry and Cordry, 1941, p. 62). In a well-known portrayal of Tlaloc, the goggle eye and mouth are comprised of snakes (Seler, 1902–23, vol. 4, p. 259).[42]

JAGUAR (OCELOT)

A growing body of evidence and interpretations indicates that the jaguar was closely associated with the rain gods of various Mexican cultures, especially on comparatively early archeological horizons (Covarrubias, 1942; 1946, pp. 165–170; 1947, pp. 83–85, 125, 130, 182–183; Armillas, 1947, p. 168). Jaguar features in "Olmec" art have been considered the prototype of Monte Albán's Cocijo and the Teotihuacán-Aztec Tlaloc figures. It is suggested that in later times there was an increasing association of the Mexican rain gods with the serpent, at the expense of their jaguar connections.

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[42] From this, Joyce (1913, p. 372) seems to infer that the symbolism of the weeping eye is maintained in connection with Tlaloc. If this is correct, one might go on to say that, by the same line of reasoning, water is also indicated emerging from Tlaloc's mouth. This sort of speculation is indulged in above, in provisionally connecting water from between the legs with serpent heads which decorate loincloth aprons at Izapa (Entry 16) and throughout Classic Maya sculpture. The warning that was given merits repetition, however: the fact that the snake does possess strong aquatic associations makes it justified to speculate in terms of such symbolism but not to base conclusions on these unsupported speculations. Clearly, one cannot legitimately infer water every time a serpent motif appears in Mesoamerican art.

Whatever the historical realities in regard to the origin and diffusion of the jaguar, a strong ingredient of this animal is apparent in the later Mexican rain gods. This is testified by one of Tlaloc's titles, Ocelocoatl (Serpent-Jaguar). Tlaloc's jaguar features seem to be most readily observable in southern Mexico, where, for example, he is sometimes pictured in the codices wearing a jaguar headdress. Jaguar ears occasionally occur in Tlaloc's headdress as well as in that of Chalchihuitlicue (cf. certain earlier representations of Cocijo). Tlaloc's down-turned mouth does not duplicate that of the "Olmec" jaguar but certainly suggests it.

Traditional thinking about the role of the jaguar in Maya religion has been quite different. According to Spinden:

> It seems that the drama of nature was partly explained by the conflict between a Jaguar God of the clear sky, the sun, the moon, the stars and the dry season, and a Serpent God of the clouded sky, the storm, the lightning, the rain and the wet season of the year. The planet Venus and, perhaps other planets as well, helped the Serpent God and was inimical to the Jaguar God. [Spinden, 1940 a, pp. 162–163; cf. Spinden, 1940 b, pp. 465–466.]

The front of Altar O, Copán, according to Stromsvik, is

> carved to represent a grotesque double-headed animal, half serpent and half jaguar, with a toad curving over the end, and the rain symbol carved on the stomach of the beast. This mythological creature is believed to represent the heavenly forces, the jaguar standing for the dry, the serpent for the rainy, season. These two are always engaged in battle. Rain being the most necessary, the rain god is the more important; but at times of destructive floods he becomes too violent and the dry weather jaguar god must be invoked. [Stromsvik, 1947, pp. 46–47.]

Recently, however, Thompson has included the jaguar as an aquatic symbol common to the Maya and other Mesoamerican centers during the Classic period (Thompson, 1951, p. 36). The Maya god of number nine, associated with the day Chicchan (snake) and rain, is said to have jaguar markings which consist of a paw on the temple and, perhaps, jaguar spots on the chin (Thompson, 1950, p. 135). References to *balam hail* (jaguar rain or water) in post-Conquest Maya writings are also noted by Thompson, who suggests a comparison with Yaxchilan texts that show jaguar glyphs in apparent association with the supposed glyph for rainy sky (Thompson, 1950, p. 298).

Spinden (1913, pp. 77, 135), Thompson (1950, pp. 72, 74, 279), and Rands (1953) have noted the connection of the jaguar and the water lily, a point of possible significance for the animal's aquatic associations. The presence of the water lily reflects the fact that the jaguar is a deity of the underworld, comparable to the Mexican

Tepeyollotl (Heart of the Mountains), according to Thompson. In a different connection, Cordy notes:

> A god mentioned in Maya mythology is one known as *Ah Buluc Balam*. In Maya art, the jaguar, *balam*, is sometimes represented with a water lily, i. e., the jaguar is in the water. Buluc means "eleven," but it also means "submerged in water." [Cordy, 1946, p. 110.]

BIRD

When dealing with Mesoamerican religious concepts, it is dangerous to lump the many species of birds inhabiting the area into a single category. Vastly different attributes may, for example, have been given birds of prey as opposed to other types, let alone the possible variations from one species to another. To establish an aquatic association for one bird may mean little in terms of Aves as a whole. Nevertheless, difficulties in identifying birds in Mesoamerican art according to species, as well as the practical problems involved in tabulating many entries, make a general treatment necessary.

The owl, in particular, may be closely associated with rainfall. Contrary to the opinion which has long prevailed among Maya students, Thompson connects the moan bird or screech owl with water symbols rather than with death (Thompson, 1950, pp. 49, 114–115, 275, 277). He notes that in addition to "screech owl," "moan" has the meaning in Yucatec of "cloudy" and "drizzle." Moreover, a linguistic and conceptual connection is seen between the moan bird and the mythical Tamoanchan of the Mexicans. The descriptive statement, "From the land of the rain and the mist, from Tamoanchan I, Xochiquetzal, came," is felt by Thompson to correspond well with the moan bird's cloud-filled home in the sky. It is of considerable interest, therefore, to note, with Armillas (1945, pp. 10–12), that the owl is closely associated with Tlaloc figures at Teotihuacán; and Thompson (1951) considers the owl to be one of several aquatic symbols widely spread on the Classic horizon in Mesoamerica.[43]

MISCELLANEOUS ANIMAL

A few other animals occur as water producers. The peccary and perhaps the scorpion have these associations in the Maya codices (Tozzer and Allen, 1910, p. 291).

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[43] But contrast Tozzer and Allen: "In connection with the [Maya] screech owl referring to death, it is interesting to note that among the Nahuas the owl is considered of unlucky augury and is usually found in the 'House of Death' and of 'Drought,' as contrasted with the turkey, considered as a bird of good fortune, and found in the 'House of Rain'." (Tozzer and Allen, 1910, pp. 339–340. Cf. these authors, p. 328, for associations of the turkey with rain and with Tlaloc; pp. 291, 330 for connections of the king vulture with rain in the Maya codices.)

SERPENTINE-SAURIAN MONSTER

Perhaps the associations of water which characterize the serpent may hold true for this mythical dragon, as well. Combining features of the snake and of an aquatic animal such as the crocodile, the composite monster seems truly to manifest a connection with water on both sides of its ancestry. Nevertheless, Spinden's warning that the serpent serves primarily artistic rather than religious functions may be useful to remember (Spinden, 1913, pp. 33, 237). The tendency he sees for the Mesoamericans to inject something of the snake into myriad art forms may lessen the value of the serpent-derived motifs as evidence that the concept of water is involved.

Various workers in the Maya field have, however, associated the composite monsters which so frequently occur in the sculptures with water. Thompson, again, has the most definitive statements (Thompson, 1939, pp. 152–160; 1950, pp. 11, 110–111, 274–275).[44] His detailed arguments need not be repeated, but certain conclusions which are important to the present study merit reemphasis. (1) The so-called sky monster or celestial dragon is probably to be identified with Itzamna. (2) Streams of water are sometimes pictured in connection with this monster. (3) Planetary sky bands in the codices, from which rain is commonly shown as falling, are conventionalized segments of the monster's body. (4) The cauac "bunch of grapes" motif, central element in the glyph for the day Cauac ("storm," "thunder," "rain") and one of the most securely identified water symbols, appears frequently on the body of the monster. (5) The moan bird, another water symbol, is frequently depicted immediately above the monster. (6) The fish and water-lily motif, "an undoubtedly aquatic symbolism," is often associated with the monster.

DETACHED REAR HEAD OF MONSTER

The double-headed Maya sky monster has been described in a previous section. The occurrence of elements suggesting death is marked on its rear head, and according to Thompson the head may represent a manifestation of the sun at the moment of its rising from the underworld (Thompson, 1950, p. 173). The concepts associated with the head may in large part be retained when the head appears independently of the monster's body. Given a human body and shed of the triple symbol, many of these heads would qualify well as the anthropomorphic Long-nosed God (cf. Spinden, 1913, pp. 66–68).

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[44] For general treatments of the "Two-headed Dragon" or "Double-headed Monster," cf. Maudslay, 1889–1902, vol. 1, pp. 51–52, vol. 4, p. 37, pls. 92, 93; Spinden, 1913, pp. 53–56.

OTHER GROTESQUE HEAD, FACE

A few other heads or mask panels, some of which may also represent composite supernatural beings, are apparently connected with the direct water associations.

DEATH, MISFORTUNE, DESTRUCTION

Certain data already presented in different connections bear on this configuration. The Mexican *atl-tlachinolli* symbol has a direct relationship to warfare and hence to death and destruction. The frequently warlike guise of the black god in the Maya codices is a point of comparison. The destructive aspects of Goddess I are pronounced but are apparently due to too much water, or perhaps the wrong kind of water, rather than to warfare. The Maya day sign Eb is usually described as an unfortunate one, and it would seem that this is due to the harmful, crop-destroying mildew and smut with which it is associated. Comparisons exist in the several types of harmful precipitation stored in Tlaloc's jars and in the tendency of the rain gods' helpers to cause damaging floods. Finally, the occurrence of death symbols at the rear head of the Maya sky monster may denote a connection with the underworld and thus have reference to more purely cosmological matters than to the complex of ideas specifically associated with misfortune and destruction.

Additional data from Mesoamerican religious concepts may also be applicable. The belief in one or more previous destructions of the world by water was widely held (Seler, 1902–23, vol. 4, pp. 38–64; Tozzer, 1941, p. 136). In Yucatan, the sickness-bringing winds blow from some form of water such as the sea, cenotes, or the rain (Redfield and Villa, 1934, pp. 164–165, 372). Whether the concept of *aires* is basically Indian or Spanish in origin, and opinion seems to lean toward the former explanation, one is reminded of ancient Aztec beliefs in regard to the Tlalocs (Sahagun, 1932, pp. 45, 47; cf. Parsons, 1936, pp. 214–215, 494; Thompson, 1930, p. 62). Parsons (1936, pp. 213, 542), and after her Beals (1945, p. 98), tentatively suggest some connection between rain-bringing spirits and the ancestral dead, on the order of the Pueblo kachinas.

WATER DESCENDING ON SURFACE WATER

The descent of rain upon a representation of surface water suggests either that the land is being inundated, i. e., a universal deluge, or that the rain is falling over some body of water. As of uncertain significance in the latter connection, note the affinity of rain or the rainmakers in Maya belief to cenotes and, possibly, the sea (Redfield and Villa, 1934, pp. 115, 207; Villa, 1945, p. 102; Thompson, 1930, pp. 128, 149). Tlaloc is described as he who "sent hail and lightning and storms on the water and all dangers of rivers and the sea" (Sahagun, 1932, p. 26).

WATER DESCENDING ON FIGURE

It has been suggested, in the discussion of portrayals in the Maya and Mexican codices, that the sprinkling or pouring of water upon human figures does not fit closely into the rainmaking complex with which the study is primarily concerned. Nevertheless, the Mexican rain god Tlaloc was seen to occur in this activity (Nuttall 5). Data presented elsewhere in the present section are of no little interest in this connection. One of the Tlalocs, Napa tecutli, was said by the Aztecs to wash, bathe, and sprinkle rain on men, while the god's impersonator actually sprinkled the people with a branch (Anderson and Dibble, 1950–52, bk. 1, pp. 20–21). Bathing and sprinkling also took place in Mesoamerican baptismal ceremonies (Anderson and Dibble, 1950–52, bk. 1, p. 8; Tozzer, 1941, p. 105),[44a] and the Mexican references to green (blue) and yellow water, cited above in connection with the Maya glyphs yax and kan, occur in contexts denoting ritual purification rather than rainmaking. In one of the examples of yax and kan signs in a stream descending from the hands, the stream gives somewhat the appearance of splashing upon a kneeling human figure (Entry 54).

Additional references abound to the pouring or sprinkling of water on sacrificial victims, corpses, and supernatural beings or impersonators. (See Anderson and Dibble, 1950–52, bk. 2, pp. 130–131, bk. 3, pp. 7, 14, 40, 42, pls. 4, 10.) Compare the configuration of death and destruction in connection with some of these practices.

THE BENDING-OVER RAINMAKER

Several factors might contribute to a bending or leaning posture: advanced age; bodily deformity; or the activity performed by the individual, such as leaning or crouching over the vessel from which water is being spilled. It is therefore difficult to know what characteristics to seek in the nonartistic data.

THE SKY MONSTER AND ITS AFFILIATES

See under "Serpentine-saurian Monster," "Detached Rear Head of Monster," and "Serpent," above, although it must be remembered that all snakes are not sky snakes. (See Thompson, 1939, pp. 156–160.)

[44a] Cf. Lumholtz, 1902, vol. 2, pp. 57, 177 for the Huichol.

BALANCED WATER AND VEGETATION

The association of rain and vegetation in Mesoamerican thought is too well known to require documentation here. For some of the specific manifestations that it apparently takes in Mesoamerican art, see "Water and the Water Lily," above. For data of the sort discussed elsewhere in the appendix, note the double meanings of the *ak* words in Yucatecan, relating to the turning green of maize (e. g. *ak, ak ixim, ak nal*) and a set of ideas concerning soaking, urination, pouring water, and the rainy season (*ákzah, akzah, akci, akyaabil,* etc.). (Motul Dictionary, 1929, pp. 115–116; Pío Pérez, 1866–77, pp. 1, 2, 8, 9; Thompson, 1950, p. 282.)

SUMMARY

It is clear from the foregoing discussion that imposing quantities of established factual data or current opinion can be brought to bear on almost all of the water associations. The material from Mesoamerica could, in several instances, be multiplied. Here, however, it seems of greater significance to evaluate the findings than to pile minutiae on minutiae.

To begin with, it must be recognized that certain of the currently accepted beliefs which relate specific beings to water are based primarily upon artistic evidence. Thus, God B would not be so unanimously accepted as one of the Maya rain gods if he were not so frequently pictured in the codices pouring water out of a jar. Accordingly, no new evidence is being presented when this deity is recorded three or four times in the water-pouring act in the codices (table 1). God B, himself, is no more securely associated with rain than he was prior to the present study. More significantly, the same criticism would apply in part to a claim that several of Thompson's conclusions represent independent evidence supporting the identifications made in this paper. (Note the importance of artistic data in Thompson's conclusions regarding several water symbols (Thompson, 1950, pp. 275–276, figs. 44, 45; p. 193).) However, much of the data are entirely independent of artistic considerations. A second warning merits reemphasis. Even though the various associations have been proved to exist with water, they may well occur with additional objects that are lacking aquatic associations.

For the most part, the nonartistic data are numerous and their importance great as evidence supporting the identifications. Of the direct water associations, those with containers and perhaps the hands receive the strongest support. The sprinkling of water from an aspergillum or comparable object is well documented, but from the descriptions one would assume these objects to differ considerably from the heads of Tlaloc or the Long-nosed sky monster which, as has been suggested, may be portrayed as objects for sprinkling. As a consequence, the evidence in this case is not too convincing. Double meanings accorded a number of words in Yucatecan are highly suggestive as evidence that varied physiological functions, whereby liquids are excreted, are to be associated with rainfall. Except in the case of tears, however, there is virtually nothing else which has been found in the way of support from the historical or ethnological sources. So far as the occurrence of glyphs is concerned, Eb, through its apparent relationship to the *bul-eb* bug, is more securely associated with nonartistic data than is true of yax, kan, and completion (zero), although the Aztec pairing of green and yellow water offers a suggestive correspondence to yax and kan in Maya representations.

The review of the water producers has yielded nothing new in the way of evidence which would suggest their aquatic functions, but the marshaling of old data is in itself impressive. Tlaloc and Chalchihuitlicue are known to be water deities, and although there may be some doubt as to the specific identity of the Maya deities we know as Goddess I and the Long-nosed God, their intimate association with water is unquestioned. The association of the frog and snake with water is also a matter of record. Thompson (1939) has already argued convincingly for the aquatic nature of the sky monster. To consider the jaguar and the black god or gods of the Maya as closely connected with water is less in keeping with traditional opinion, yet a number of the data lean in that direction.

The nonartistic data have not been particularly rewarding in the case of the configurations. This may arise in part from the complex nature of the configurations. The themes are abstracted from recurrent situations appearing in the art; as a result, they are in a sense less tangible and more implicit. Even if reference is made to them in folklore or in general statements about religious beliefs, they are more difficult to identify. There is always the possibility that, after all, reference is actually being made to something else. Nevertheless, a number of the data relating to death and destruction and to the descent of water on a human figure may be applicable.

Finally, reviewing past work by Thompson (1950), a number of Maya glyphs have been discussed whose elements apparently relate to or symbolize one or another of the direct water associations. For the most part, the glyphs seem to depict or symbolize water either in connection with the hand or with yax, kan, or completion affixes.

APPENDIX B

IDENTIFICATIONS OF SUBJECT MATTER IN MESOAMERICAN ART

It would be premature to set forth a detailed statement of principles about the methodology involved in making identifications of subject matter in Mesoamerican art. Clearly, the procedures have to vary according to the special requirements imposed by the specific problem. The following observations apply particularly to identifications in Maya art, but to varying degrees they are applicable to the art of other cultures. The subject matter involved in the present study, falling streams of water, has considerable illustrative value.

If principles cannot be formally enunciated, at least a number of methodological constructs may be listed and given cursory discussion. These are: (1) Working from the known to the unknown (projecting backward through time); (2) seeking to discover convergence (a result of historical developments that operate upward through time); (3) utilization of traits based on motifs which are subject to ready and meaningful artistic comparison; (4) coupled with this, a willingness to see the artistic creations as a functional whole; (5) differentiating rigorously between the various levels of probability; (6) while making this distinction, a willingness to use data of limited probability as supporting evidence; (7) recognition of complexes, wherein motifs showing important differences nevertheless reveal a common pattern or set of recurrent patterns; (8) maintaining an awareness of alternative explanations and, if possible, subjecting the various possibilities to comparative statistical analysis; (9) a willingness to use clues as to patterns of thinking provided by nonartistic data from the culture in question. Basic to the use of all these constructs is the principle common to all scientific investigation: the simplest explanation is the most probable one. It is apparent, moreover, that the identifications are not subject to absolute proof; it is a matter of relative probabilities, ideally expressed so as to compare one hypothesis with another.

At the core of the present investigation are the first and seventh constructs—working from the known to the unknown and working with highly patterned complexes. A differentiation has been made between the more "purely artistic" and the "nonartistic" data, but this is in a sense arbitrary, for conceptual factors are embodied in the art forms. It may be more useful to equate the artistic factors with the appearance of the streams of water themselves and the conceptual factors with the associations which the streams have. In the case of both artistic and conceptual factors it has been possible to find convincing counterparts of known representations of water in the art of earlier periods or different cultures. The requirements of the first construct have, then, been successfully met. So far as the seventh construct is concerned, the complex of representations may be described as a tightly knit nucleus, wherein the representations are closely allied with one another and with known portrayals of water in the codices, surrounded by a fringe of art forms which are related in varying degrees to the nucleus but which, by and large, lack very close artistic and conceptual correspondences with the known portrayals. Figure 16 is an attempt to show some of the specific connections within the nucleus and to suggest the existence of the fringe part of the complex. The fact that figure 16 can be drawn is in itself a verification of the existence of a well-knit complex, and it must be remembered that many of the data have been omitted from the chart, owing to the requirements of space and effective presentation.

What exactly is the theoretical significance of such a complex? It will help to bring the problem into sharper focus if we restrict discussion for the moment to the nuclear part of the complex. A fairly wide range is displayed, conceptually and artistically. Conceivably, this might be the result of random factors—changes in art style, diffusion of ideas from new sources or the elimination of old contacts, individual whim on the part of the artist—factors known to be of great importance in culture history but which are fortuitous from the standpoint of the present conceptually oriented investigation. If these factors were operative exclusively, one would expect the divergence to be of a random sort. There would be no network of common conceptual threads which would consistently weave the divergent designs into a whole. A concrete illustration may be helpful. As a result of purely stylistic factors—elements of design in the artist's repertoire, need for a balanced composition, and so on—a given motif might resemble water shown gushing from the mouth of the sky monster on Dresden 74. But if sheer artistic factors were at play, would the design likewise be associated with a portion of the sky monster? Rarely, perhaps; coincidences are to be expected in the outer ranges of a normal distribution curve. But would this same motif, associated with the sky monster both in its appearance and in its associations, tie in closely with a series of designs having certain *artistic* resemblances with the water on Dresden 74 but *associational* resemblances with water at Teotihuacán? The odds against this happening by chance rise rapidly. The examples cited are Entries 35 at Palenque and 50 to 54 at Yaxchilan. One could go on to cite additional representations linked to them, deriving support from them, and at the same time reinforcing them because of their own particular resemblances to the same or to some other known portrayal of water.

The complex is not nearly so closely knit if it is viewed as a whole, no distinction being made between the nucleus and the outer fringe. The fringe motifs have their importance, however, for there are a number of interconnecting links with the nucleus. Here we might pause to examine more closely the relationship of fringe and nucleus. What is the validity of setting them apart, even provisionally, as was done in the last paragraph? If the fang-tongue-water (?) motif is disregarded for the moment, it will be seen that the fringe associations are largely the same as for the nucleus, but fewer tend to occur in a given representation. There is a qualitative difference too, however; for by and large the fringe motifs lack artistic connections with known portrayals of water, thereby sharply contrasting with the nucleus. All this seems to suggest the portrayal of religious paraphernalia, which with some attenuation retains the associations given the water itself but which is usually so highly conventionalized as to suppress artistic resemblances to water. In the case of the fang-tongue-water (?) motif, the associations tend to form more of a self-contained subcomplex, although once again there are a number of outside ties. In all of this, the fifth and sixth constructs should be borne in mind, a rigorous differentiation between different levels of probability ("A" and "B"), coupled with the use of motifs of "B" category for what they may be worth as evidence to support representations of higher probability (e. g., the evidence of fig. 23, *a*, in knitting even more closely the complex of yax, kan, and completion glyphs). In this it should be remembered that analogy cannot properly be made to a chain, which is only as strong as its weakest link, but rather to a rope, where each strand plays a reinforcing role.

The complexes to which reference is made are, of course, subject to change through time and space. It is the underlying patterns which tend to remain relatively constant but to take on particular manifestations. Special historical developments may, however, basically alter a particular representation so that it no longer faithfully reflects the underlying pattern. This is to say that convergence may take place. If this has occurred, it should be possible to fit the representation in question into two complexes which, for the most part, are sharply differentiated. This has been examined in some detail in the case of waterlike designs, from the sky monster's rear head, that have the associations normally given vegetation (pp. 330–331). If possible, of course, the historical sequences of the diverging art forms should be known, but it seems possible to make reasonable inferences even in their absence.

Little need be said about the third construct, the need for utilizing traits which adapt themselves readily to meaningful artistic comparisons. One should be careful, for example, to distinguish between stylistic factors and the elements that go to make up the particular motif. Typologies here, as elsewhere, may be too general or too elaborated to have much comparative value. The isolation of workable traits should not be to the exclusion of attempts to see them in their functional whole, however. To illustrate the value of the less restricted approach, a short interpretative description will be given of the way in which the waterlike elements combine on Zoomorph P, Quirigua (table 3).

Zoomorph P is a carved boulder representing the double-headed monster. The monster is not a close counterpart of the one shown on Dresden 74; the body is not composed of a band of planetary symbols; hence a creature of the sky may not necessarily be shown. The precedent of Dresden 74 is, then, not brought powerfully to bear for the existence of aquatic associations. The sculpture has, however, been traditionally held to be rich in water symbolism (Spinden, 1913, p. 42, fig. 32, *b*, *c*). The frequent portrayal of cauac elements would in itself establish strong aquatic connotations, unless past research is badly awry (cf. Thompson, 1950, pp. 87, 110–111, 112). The water-pouring figures on the north face of the monument (Entries 45b, 46c, fig. 21, *a*, *b*) do not occur as isolated entities. As Maudslay's schematic drawing clearly shows, the cartouches in which they appear surge outward from the corners of the mouth of the monster's front head (Maudslay, 1889–1902, vol. 2, pl. 58, *c*). This is the typical treatment accorded fangs in Maya art (as well as sometimes the water lily), and probably fangs were the basic concept involved. It probably is not a coincidence, however, that streams of water are shown overlying the fangs which lead from the mouth. One may suppose that the priest-artists recognized the potential double meaning inherent in the design and played upon it, just as in the hieroglyphs and post-Conquest writings, punning of a rebus sort was constantly being employed (see Appendix A and Thompson, 1950, pp. 46–48). If this lesson is taken to heart, it is possible that the anomalies in the portrayals of possible water and vegetation or in the fang-tongue-water (?) motif will be resolved. Convergence may have taken place through purposeful substitution, without losing sight of the concepts involved. Other water pourers occur immediately above the eyes on the sides of the monster (Entries 46d–f, fig.

22, *a–c*). It is possible that these locations, too, are not accidental, as the presence near the eyes could denote weeping and rainfall. The case is not as convincing as with the water pourers that overlie the fangs, however. As has been noted, water and the water lily are balanced effectively on the monument (Entry 46a, fig. 23, *f*; perhaps also Entry 46g, h, fig. 23, *g*). To these specific representations there should be added the appearance of the monster's front head as a functioning, dynamic unit. It has just been suggested that the monster's fangs carry the connotations of water. At the top of the boulder, as the creature's headdress or growing from its head, are sculptured leaves of the water-lily plant (Rands, 1953, p. 106). The motif encountered elsewhere (e. g., fig. 23, *d*, Tikal), of a water lily growing from the head while water emerges from the mouth, is very likely expressed symbolically.

The ninth construct, the use of patterns of thinking inferred from nonartistic data, was employed in the analysis of Zoomorph P. It would appear that for the Maya, at least, the principles behind rebus writing can to some extent be used in studying the artistic creations. They would appear nicely to complement Spinden's more purely artistic approach to the same general phenomena, subsumed under the terms simplification, elaboration, elimination, and especially substitution (Spinden, 1913, pp. 38–46; cf. Rands, 1953, p. 122).

Of the various constructs the eighth, the consideration of alternative explanations, is perhaps most weakly developed in the present study. True, some attention has been given fang, tongue, teeth, and vegetation, but it was of a rather cursory nature. So far as liquids are concerned, it is well to recall the assumption, expressed in an earlier section, that if the complex as a whole is rooted in aquatic symbolism, it would not be of crucial importance if a few of the representations should actually prove to depict blood or some beverage. For ethnologic data reveal many instances in which such a substitution took place in rainmaking rites and magic. If this is true in too many instances, of course, the case breaks down. A careful documentation of the relative strengths and weaknesses of the many other possibilities which might come to mind is lengthy, involved, and cannot be made here. One suspects that it would not be worth while, at least for some of the more remote possibilities. Until a case comparable in detail to the present one is made, however, it is impossible to say much along these lines other than that it is the writer's considered belief that the associational and artistic ties are much stronger with water than with any other object of which he knows. Perhaps an even stronger conclusion is that some definite concept, water or otherwise, is expressed by a majority of the representations. Although convergence did take place and differences in meaning must have become blurred on occasion, it seems impossible to explain the existence of the nuclear complex without granting the existence and importance of conceptual factors.

APPENDIX C

NOTES ON THE TABLES

Symbols used in tables 1, 2, 3, and 6 are: "×", to indicate the presence of a trait, "?" or more rarely "??", to express possible occurrences, "0", to signify that the trait in question, or something approximating it, occurs importantly in the same representation but not in immediate association with water, and "--------", denoting absence of the trait. Arbitrary decisions have sometimes been necessary to decide whether the indirect "0" associations are of sufficient significance to be included.

The portrayals of water are too infrequent to make numerical totals of much significance. Thus in the summary table, 6, presences and possible presences are indicated without regard to the frequency of the trait. In table 5, numerical totals refer to the number of times a specific glyph occurs in the supposed stream or streams of water.

Asterisks serve a dual function. In table 3 they indicate the possible presence of a trait on Zoomorph P, Quirigua, as inferred from the relationships of the motifs to the sculpture as a whole (Appendix B). In table 5, again, asterisks suggest that the trait may be expressed symbolically, although glyphs are not actually in contact with water. In table 4 the asterisks signify that the dating is based on intensive stylistic analyses made by Proskouriakoff (1950). The dates, given only for the Maya monuments, indicate baktun, katun, and tun.

Letters also serve a dual function. In tables 2 and 3 they indicate probabilities, "A" being relatively high and "B" relatively low. The B category is in some cases subdivided by the use of plus signs. In most, although not all, cases the representations of A probability constitute the nuclear complex and B the fringe (fig. 16, Appendix A). Some merging of the high and low categories tends to occur, but it is not marked.

In table 4, letters are used arbitrarily to refer to the artistic typology set up for waterlike designs in Classic Maya art. "A" indicates the columnar stream, "B" the divided stream, and "C" the fang-tongue-water (?) motif. Variant representations are indicated by interrogation points. Artistic types are given only for Maya sculptures, murals, and ceramics.

In "Number of representations" (tables 2, 3) the total refers to the number of beings associated with waterlike designs. Thus, if waterlike motifs occur with both front and rear heads of a single monster, a single representation is recorded. If, however, the heads are detached although presumedly relating to a single being, the number of isolated heads with which the pertinent designs occur is given.

If two or more representations of differing probabilities appear on a single monument, only the highest probability is recorded. In such a case, however, the occurrence of traits for the less certain representation may be marked by interrogation points. On the other hand, if the highest or only probability given for a monument is B, traits are accorded a positive (×) occurrence. This differential treatment would decrease the reliability of any totals which might be gotten but gives insight into the particular situation on a given monument.

The titles of the tables are self-explanatory. For additional data on the reading and significance of the tables, see pages 291, 302, 329, 335, and 350.

TABLE 1.—*The better established occurrences of water*

Representation	Direct water associations											Water producers													Configurations					
	Water from container	Water from mouth	Water from eye	Water from breast	Water from between legs	Water from body (pores?)	Water from hand	Water from other object in hand	Waterlike design from head	Glyph in water	Object in water	Tlaloc, Tlaloc variant	Anthropomorphic Long-nosed God	Female water deity	Black God (M, B)	Miscellaneous anthropomorphic	Frog	Serpent	Jaguar	Bird	Miscellaneous animal	Serpentine-saurian monster	Detached rear head of monster	Other grotesque head, face	Death, misfortune, destruction	Water descending on surface water	Water descending on figure	The bending-over rainmaker	Sky monster and its affiliates	Balanced water and vegetation
MAYA CODICES																														
Dresden 74	X	X	----	----	?	----	----	----	----	X	?	----	----	X	X	----	----	X	?	0	----	X	----	----	X	----	----	X	X	----
Dresden 39b	X	----	----	----	----	----	----	----	----	----	----	----	----	X	----	----	----	0	----	----	----	----	----	----	----	----	----	----	----	----
Dresden 43b	X	----	----	----	----	----	----	----	----	----	----	----	----	X	----	----	----	0	----	----	----	----	----	----	----	----	----	X	----	----
Dresden 67a	X	----	----	----	----	----	----	----	----	----	----	----	----	X	----	----	----	0	?	----	----	----	----	----	----	----	----	----	----	----
Madrid 7a	----	----	----	----	X	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	X	----	----	----	----	----	----	----	----	----
Madrid 7b	----	----	----	----	X	----	----	----	----	----	----	----	----	----	----	X	----	----	----	----	----	----	----	----	X	----	----	----	----	----
Madrid 9	?	----	----	----	?	----	----	----	----	----	----	----	?	----	----	----	----	?	----	----	----	----	----	----	----	----	----	----	?	----
Madrid 13b	X	----	----	----	----	----	----	----	----	----	----	----	X	----	----	----	----	0	----	----	----	----	----	----	----	----	----	X	0	----
Madrid 14b	X	----	----	----	----	X	----	----	----	----	----	----	----	----	----	----	----	X	----	----	----	----	----	----	----	----	----	----	?	----
Madrid 18b	----	X	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	X	----	----	----	----	----	----	----	----	----	----
Madrid 26d	X	----	----	----	----	----	----	----	----	----	----	----	X	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	X
Madrid 30a	X	----	----	----	----	----	----	----	----	----	----	----	X	X	----	----	----	0	----	----	----	----	----	----	----	----	----	----	0	----
Madrid 30b	----	X	----	X	X	----	----	X	----	----	----	----	0	X	----	----	----	----	X	----	X	----	----	----	----	----	----	----	----	----
Madrid 31a	----	X	----	----	X	----	----	----	----	----	----	----	X	----	----	----	X	----	----	----	?	----	----	----	----	----	----	----	----	----
Madrid 32a	----	----	----	----	----	----	----	----	----	----	----	----	----	----	0	----	----	0	----	----	----	----	----	----	X	----	----	----	----	----
Madrid 32b	----	X	----	----	X	----	----	----	----	----	X	----	----	X	----	----	----	0	----	----	----	----	----	----	X	----	----	----	----	----
Madrid 33b	----	----	----	----	X	----	X	----	----	----	----	----	----	----	X	----	----	----	----	----	?	----	----	----	----	----	----	----	----	----
Madrid 93c	----	----	----	----	----	----	X	----	----	----	----	----	----	----	----	X	----	----	----	----	----	----	----	----	----	----	X	----	----	----
Paris 21	----	----	----	----	----	?	----	----	----	X	----	----	----	----	0	----	----	0	----	----	----	X	----	----	----	----	----	----	X	----
MEXICAN CODICES																														
Baranda 3	----	X	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	X	----	----	----	----	----	----	----	----	----	----	----	----
Borgian 4	----	X	----	----	----	----	----	----	----	----	----	----	----	----	----	X	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Borgian 27, 28	??	----	----	----	X	??	?	X	----	----	X	X	----	----	----	----	----	X	----	----	0	----	----	----	X	X	X	----	----	X
Borgian 31	X	X	----	----	----	----	----	----	----	----	X	----	----	----	----	X	----	----	----	----	----	----	----	----	X	----	X	----	----	----
Borgian 36	----	X	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	X	----	----	----	----	----	----	----	----	----	----	----	----
Borgian 57	X	----	----	----	----	----	----	----	----	----	----	----	----	----	----	X	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Borgian 65	----	----	----	----	?	----	----	----	----	----	----	----	----	0	----	X	----	----	----	----	----	----	----	----	X	?	----	----	----	----
Borgian 67	----	----	----	----	??	----	----	----	----	----	----	0	----	----	----	X	----	----	----	----	----	----	----	----	X	?	----	----	----	----
Borgian 72	----	?	0*	----	----	----	X	----	----	----	?	X	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	X	----	----

Colombino 9, 23		×														×									0					
Dehesa 9		×																×												
Fejervary-Mayer 8	×									×																				
Fejervary-Mayer 33	×									×				×				0	0											×
Fejervary-Mayer 37	×																													
Hamburg [1]	×						?	?			×	0				×														
Laud 1	×											0					×				0					×		×		
Laud 24	×																									?				
Laud 25	×										×					×														
Nuttall 5	×											×															×			
Nuttall 19	×															×											×			
Rios 4	×				?						?			×											×	×				
Selden 9								×				×														??				
Vienna 12	×															×											×			
AZTEC SCULPTURE																														
1. Tenochtitlan (?)	×					?					×					×					?									×
TEOTIHUACAN MURALS																														
2. Atetelco		×						?		×	×					×		×	?											
3. Teopancaxco	0	×					×				×					×												?		?
4. Tepantitla	0	×					×			?	×	×				×				0						×				×
5. Tetitla		×					×	?		?	×					×			×	0								×		
TEOTIHUACAN SCULPTURES																														
6. "Goddess of Water"							×							?																
7. "Tlaloc's emblem"		?					×					×														?				
8. Miscellaneous		×																		×										
TEOTIHUACAN CERAMICS																														
9. Aljojuca	0	?					×									×												×		
10. Calpulalpan	0						×		?			×				×		0		0	0					×		×		
11. Xolalpan		?										×								×										
12. Miscellaneous		×										×														×				
13. Miscellaneous		×																		?						×				

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* Apparently not a producer of the water but in direct, intimate association with it.

[1] Questionable authenticity.

TABLE 2.—*The proposed identifications of water*

Representation	Probability	Number of representations	Direct water associations											Water producers													Configurations					
			Water from container	Water from mouth	Water from eye	Water from breast	Water from between legs	Water from body (pores?)	Water from hand	Water from other object in hand	Waterlike design from head	Glyph in water	Object in water	Tlaloc, Tlaloc variant	Anthropomorphic Long-nosed God	Female water deity	Black God (M, B)	Miscellaneous anthropomorphic	Frog	Serpent	Jaguar	Bird	Miscellaneous animal	Serpentine-saurian monster	Detached rear head of monster	Other grotesque head, face	Death, misfortune, destruction	Water descending on surface water	Water descending on figure	The bending-over rainmaker	Sky monster and its affiliates	Balanced water and vegetation
NON-MAYA MURALS																																
14. Monte Alban, Tomb 105	A	2	0	×	----	----	----	----	×	----	----	----	----	----	----	----	----	×	----	----	----	----	----	----	----	×	----	----	----	×	----	----
NON-MAYA SCULPTURES																																
15. Cerro de las Mesas, Monument 2	B	1	----	----	×	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	×	----	----	----	----	----	----
16. Izapa, Stela 1	A	2–5	×	?	?	----	0	----	----	----	----	?	×	----	----	----	----	×	----	0	----	?	0	----	----	??	----	×	----	×	?	----
17. Izapa, Stela 5	B+	1	----	×	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	?	----	----	0	----	----	----	----	×	----	----	?	----
18. Izapa, Stela 11	B	1	----	×	----	----	----	----	----	----	----	----	----	----	----	----	----	?	----	----	----	----	----	----	----	----	----	----	----	----	----	----
19. Monte Alban, Stela 11	A	1	----	×	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	×	----	----	----	----	----	----
20. Tres Zapotes, Stela C	B	1	----	----	×	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	×	----	----	----	----	----	----	----	----	----	----	----
21. Tres Zapotes, Monument C	B+	?[1]	----	×	----	----	----	----	----	----	----	----	?	----	----	----	----	0	----	?	----	----	----	----	----	×	?	?	----	----	----	----
NON-MAYA CERAMICS																																
22. Chalchuapa Zone	B	1	----	??	×	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	×	----	----	----	----	----	----
23. Kaminaljuyu	B	3	----	----	×	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	×	----	----	----	----	----	----
23a. Kaminaljuyu (plaque)	A	1	----	----	0	----	----	----	----	?	----	----	----	×	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
MAYA MURALS																																
24. Bonampak, Room 3	B	3	----	×	----	----	----	----	----	----	----	----	----	----	----	----	----	×	----	0	?	----	----	----	----	----	----	----	----	----	0	----
25. Tulum, Castillo	A	3	----	----	----	----	----	×	----	----	----	----	----	----	0	----	----	----	----	0	----	----	×	----	----	----	----	----	----	----	×	----

MAYA SCULPTURES																																
26. Copan, Stela D	B+	1		X						?					X										?						?	
27. Copan, Stela H	B	1		?						X								X							?						?	X
28. Copan, Stela 6	B	2		X			?							X						0								??			0	?
29. Copan, Temple 22	A	2		X					?	X								?							?						?	
30. Copan, Temple 26	A	3		X										X				?									X			X		
31. Finca Encanto, tablets	A	3																						0								0
32. Jonuta, relief	B	1		X							X	X													?						?	?
33. Kabah, Str. 2C6	B	2		X							X			0											?		0				?	?
34. Palenque, House E	A	1		X							X	X										0		X							X	X
35. Palenque, Cross	A	2		X					X	X	X	X			0			X			0	0	0	0	X						X	?
36. Palenque, Sun	A	3		?							?	?													X						X	X
37. Palenque, Foliated Cross	B	2		X						X								X				0		0	?						?	0
38. Piedras Negras, Stela 2	B	2		X																						X						X
39. Piedras Negras, Stela 5	B	1		X																						X						
40. Piedras Negras, Stela 6	A	1		X							X											0		X							X	?
41. Piedras Negras, Stela 11	A	1		X							X	X										0		X			0				X	?
42. Piedras Negras, Stela 14	B	1		?							?	X										0		X			0				X	?
43. Quirigua, Stela A	A	1		X																X											X	0
44. Quirigua, Stela C	A	1		X																			X								X	??
45. Quirigua, Stela H	A	1		X								X	X		0*					X							X				X	0
46. Quirigua, Zoomorph P	A	8	X	X	?		??				X	X			X			X					X	X	?					X	X	X
47. Tikal, Stela 9	B	3		X																			X									
48. Tikal, Temple IV, Lintel 2	B	1		X																	X											X
49. Tikal, Temple IV, Lintel 3	B	1		X							0	0			X							0		0							0	?
50. Yaxchilan, Stela 1	A	3		?					X			X						X		?											?	
51. Yaxchilan, Stela 3	A	3		?					X			X						X		?											?	
52. Yaxchilan, Stela 4	A	2?		?					?			X						?		?											?	
53. Yaxchilan, Stela 6	A	3		?					X			X						X		?											?	
54. Yaxchilan, Stela 7	A	2?		?					X			X						X		?									?		?	0
55. Yaxchilan, Lintel 25	B	4?		X										X				0		?							?				?	
MAYA CERAMICS																																
56. Chalchuapa Zone	B	5							X									X														?
57. Chama	A	1	X																		X						?					?
58. Chama	A	3?	X				?											X												X		
59. Chama	B	2									X							X														?
60. La Ceiba	B	4		X							??										X	?				X						??
61. Livingstone	A	1		??					X									X														
62. Quintana Roo	A	1		X								X	X							0		X					0				X	X
63. Salvador (Nexapa)	B+	1		X							?	?								X											X	?
64. Uaxactun	B	1		X																	X											X
65. Ulua Valley	B	3?			0*		??		X			?	?					X		0*												
66. Yalloch	B+	2		X								?								X	0	0					?				X	0

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* Apparently not a producer of the water but in direct, intimate association with it.

[1] More than a half dozen possible falling streams may be counted.

TABLE 3.—*Proposed identifications of water on Zoomorph P, Quirigua*

Representation	Probability	Number of representations	Direct water associations											Water producers													Configurations					
			Water from container	Water from mouth	Water from eye	Water from breast	Water from between legs	Water from body (pores?)	Water from hand	Water from other object in hand	Waterlike design from head	Glyph in water	Object in water	Tlaloc, Tlaloc variant	Anthropomorphic Long-nosed God	Female water deity	Black God (M, B)	Miscellaneous anthropomorphic	Frog	Serpent	Jaguar	Bird	Miscellaneous animal	Serpentine-saurian monster	Detached rear head of monster	Other grotesque head, face	Death, misfortune, destruction	Water descending on surface water	Water descending on figure	The bending-over rainmaker	Sky monster and its affiliates	Balanced water and vegetation
46a	B	1		×*	?													×						*							*	×
46b	A	1	?	*											×									*						×	*	
46c	A	1	×	*											×									*							*	?
46d	A	1	×		*		??					×			×									*						×	*	
46e	A	1	×		*							×											×	*						×	*	
46f	A	1	×		*		??					×			×									*						×	*	
46g	B	1		×							×*													*	?						*	?
46h	B	1		×							×*													*	?						*	?

*Indicates inferred presence.

TABLE 4.—*The occurrences of water: Dates, artistic types, and previous illustrations*

Entry No.	Site and monument	Date	Type [1]	Illustration [2]
1	Tenochtitlan (?)			Seler, 1902–23, vol. 4, pl. 7, *a*, *b*.
2	Teotihuacán, Atetelco			Villagra Caleti, 1951, fig. 12.
3	Teotihuacán, Teopancaxco			Peñafiel, 1900, pls. 81–83, 85–87.
4	Teotihuacán, Tepantitla			Caso, 1942.
5	Teotihuacán, Tetitla			Armillas, 1950, pl. 14; Villagra Caleti, 1951, fig. 13; Marquina, 1951, fots. 32 bis, 33; Anonymous, 1947, fig. 124.
6	Teotihuacán, "Goddess of Water"			Anonymous, 1946, fig. 18.
7	Teotihuacán, "Tlaloc's emblem"			Anonymous, 1946, fig. 14.
8	Teotihuacán			Anonymous, 1946, fig. 27.
9	Teotihuacán, Aljojuca			Seler, 1913, fig. 9.
10	Teotihuacán, Calpulalpan			Linné, 1942, figs. 170–174.
11	Teotihuacán, Xolapan			Linné, 1934, fig. 26.
12	Teotihuacán			Von Winning, 1947b, fig. 1.
13	Teotihuacán			Von Winning, 1948, fig. 29.
14	Monte Alban, Tomb 105			Caso, 1938, pl. 3.
15	Cerro de las Mesas, Monument 2			Stirling, 1943, pl. 31, *a*.
16	Izapa, Stela 1			Stirling, 1943, pl. 49, *a*.
17	Izapa, Stela 5			Stirling, 1943, pl. 52.
18	Izapa, Stela 11			Stirling, 1943, pl. 53, *a*.
19	Monte Alban, Stela 11			Caso, 1928, fig. 58.
20	Tres Zapotes, Stela C	?		Stirling, 1940, fig. 7.
21	Tres Zapotes, Monument C			Stirling, 1943, pls. 5, 6.
22	Chalchuapa zone			CIW,† No. 42–16–1411A.
23	Kaminaljuyú			Borhegyi, 1950b, fig. 5, *b*, *e*, *f*.
23a	Kaminaljuyú			Kidder, Jennings and Shook, fig, 175, *a*.
24	Bonampak, Str. 1, Rm. 3	9.17.10?*	C (?)	Villagra Caleti, 1949.
25	Tulum, Castillo			Lothrop, pl. 4B.
26	Copán, Stela D	9.15. 5	A	Maudslay, vol. 1, pl. 46B
27	Copán, Stela H	9.15. 0?	?	Maudslay, vol. 1, pl. 59 [A].
28	Copán, Stela 6	9.12.10	C	Maudslay, vol. 1, pls. 105, *a*, 106.
29	Copán, Temple 22		A	Maudslay, vol. 1, pl. 19, *c*; CIW,† No. 39–13B–321.
30	Copán, Temple 26	9.16. 5?	B, C (?)	Gordon, 1902, pl. 14; CIW,† Nos. 37–13C–13, 37–13–220.
31	Finca Encanto, tablets		A	Blom, 1924, figs. 1, 2.
32	Jonuta, relief		B	Proskouriakoff, fig. 69, *b*.
33	Kabah, Str. 2C6		B	Proskouriakoff, fig. 103, *a*, *b*.
34	Palenque, House E	[3]9.12. 0?*	A	Maudslay, vol. 4, pl. 43.
35	Palenque, Cross	9.14.10?*	A	Maudslay, vol. 4, pls. 71, 76.
36	Palenque, Sun	9.14.10?*	A	Maudslay, vol. 4, pl. 86.
37	Palenque, Foliated Cross	9.15. 0?*	A (?)	Maudslay, vol. 4, pl. 81; Blom and LaFarge, vol. 1, fig. 162.
38	Piedras Negras, Stela 2	9.13.15	C	Maler, 1901, pl. 15, No. 1.
39	Piedras Negras, Stela 5	9.14. 5	C (?)	Maler, 1901, pl. 15, No. 2.
40	Piedras Negras, Stela 6	9.12.15	B (?)	Maler, 1901, pl. 15, No. 3.
41	Piedras Negras, Stela 11	9.15. 0	B	Maler, 1901, pl. 20, No. 1.
42	Piedras Negras, Stela 14	9.15.10?*	?	Maler, 1901, pl. 20, No. 2.
43	Quirigua, Stela A	9.17. 5	A	Maudslay, vol. 2, pl. 4.
44	Quirigua, Stela C	9.17. 5	A	Maudslay, vol. 2, pl. 16.
45	Quirigua, Stela H	9.16. 0	A	Maudslay, vol. 2, pl. 45.
46	Quirigua, Zoomorph P	9.18. 5?	B, C (?)	Maudslay, vol. 2, pls. 58, *a*, 60, *a*, *b*, 62, 64.
47	Tikal, Stela 9	9. 2. 0	C	Maler, 1911, pl. 20, No. 2.
48	Tikal, Temple IV, Lintel 2	9.16.10?*	C	Maudslay, vol. 3, pl. 71.
49	Tikal, Temple IV, Lintel 3	9.16.10?*	C (?)	Maudslay, vol. 3, pl. 78.
50	Yaxchilan, Stela 1		A, C	Maler, 1903, pl. 69.
51	Yaxchilan, Stela 3	9.16.10?*	A, C	Morley, 1937–38, vol. 5, pl. 100, *c*.
52	Yaxchilan, Stela 4	9.17. 0?*	A, C	Maler, 1903, pl. 70.
53	Yaxchilan, Stela 6	9.14. 0?*	B, C	Morley, 1937–38, pl. 101, *d*.
54	Yaxchilan, Stela 7	9.15.10?*	B, C	Morley, 1937–38, pl. 100, *d*.
55	Yaxchilan, Lintel 25	9.17.10?*	C (?)	Maudslay, vol. 2, pl. 87.
56	Chalchuapa zone		B (?)	CIW,† Nos. 42–16–1216 A to E.
57	Chama		B	Dieseldorff, vol. 1, pl. 22.
58	Chama		?	Dieseldorff, vol. 1, fig. 237.
59	Chama		A	Dieseldorff, vol. 1, pl. 18.
60	La Ceiba		B	Strong, Kidder and Paul, pl. 1.
61	Livingstone		A	Seler, 1902–23, vol. 3, fig. 24 (p. 682).
62	Quintana Roo		A (?)	Blom, 1950, fig. 1, *a*.
63	Salvador (Nexapa)		A, B	Spinden, 1928 a, fig. 24; Vaillant, 1928, p. 573.
64	Uaxactun		C	Smith, pl. 5.
65	Ulua Valley		B (?)	Hay et al., pl. 17.
66	Yalloch		A	Gordon and Mason, pt. 1, pl. 18.

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†Photographic files, Department of Archaeology, Carnegie Institution of Washington.

* Estimated dates based on stylistic analysis (Proskouriakoff, 1950, pp. 185–199).

[1] "A" signifies the columnar stream, "B" the divided stream, and "C" the fang-tongue-water (?) motif.

[2] Date of publication is omitted if a single work by an author appears in Literature Cited.

[3] Estimated date not based on the stucco design of the sky monster.

Table 5.—*Occurrences of glyphs in Maya "water"*

Representation	Completion (zero)	Kan	Yax	Eb	Ahau	Other, doubtful, pseudo-glyph
Dresden 74	1(?)			1		
Paris 21						2
32. Jonuta						5
34. Palenque, House E			1			1
35. Palenque, Cross	2					
36. Palenque, Sun	1(?)					
Palenque, House D, Pier c*	*1	*1				
41. Piedras Negras, Stela 11	2		1(?)			
42. Piedras Negras, Stela 14					1	
45. Quirigua, Stela H	4	3				
46. Quirigua, Zoomorph P		2			1(?)	
49. Tikal, Temple IV, Lintel 3*			*1			
50. Yaxchilan, Stela 1		1	2			2
51. Yaxchilan, Stela 3		3	2			
52. Yaxchilan, Stela 4		1	1			
53. Yaxchilan, Stela 6		2	1			
54. Yaxchilan, Stela 7		1	1			
62. Quintana Roo		1				1
63. Salvador						2
65. Ulua Valley						2

*Indicates inferred symbolism; glyphs not in representations of water.

TABLE 6.—*Comparative summary of the water associations*

Culture	Direct water associations											Water producers													Configurations					
	Water from container	Water from mouth	Water from eye	Water from breast	Water from between legs	Water from body (pores?)	Water from hand	Water from other object in hand	Waterlike design from head	Glyph in water	Object in water	Tlaloc, Tlaloc variant	Anthropomorphic Long-nosed God	Female water deity	Black God (M, B)	Miscellaneous anthropomorphic	Frog	Serpent	Jaguar	Bird	Miscellaneous animal	Serpentine-saurian monster	Detached rear head of monster	Other grotesque head, face	Death, misfortune, destruction	Water descending on surface water	Water descending on figure	The bending-over rainmaker	Sky monster and its affiliates	Balanced water and vegetation
Post-Conquest Mesoamerica [1]	×	?	×	?	×	×	×	×	----	?*	----	×	×	×	?	----	×	×	?	?	----	----	----	----	×	×	×	----	×	×
Maya codices and late Yucatán	×	×	----	×	×	×	×	×	----	×	×	----	×	×	×	×	×	×	×	×	×	×	----	----	×	----	×	×	×	×
Mexican codices and Aztec	×	×	0	----	×	?	?	×	----	×	×	×	----	×	----	×	×	×	----	----	?	----	----	----	×	×	×	×	----	×
Teotihuacan	0	×	----	----	----	----	×	?	----	×	×	×	----	?	----	×	----	×	×	×	----	----	----	----	----	×	----	×	----	×
Non-Maya	×	×	×	----	0	----	×	?	----	?	×	----	----	----	----	×	----	?	×	?	0	----	----	×	?	×	----	×	?	----
Classic Maya	×	×	?	----	?	----	×	×	×	×	×	×	×	----	----	×	----	×	×	×	×	×	×	×	×	?	?	×	×	×

*Indicates inferred presence.

[1] Ethnohistorical data from Appendix A; epigraphic evidence omitted.

APPENDIX D

NOTES ON FIGURE 16

Figure 16 is an attempt to portray visually the interrelationships of most of the identifications of water in Maya art. Although the arbitrary limitations imposed by spatial considerations and two-dimensional representation have influenced the specific form which the chart takes, they have not been permitted to distort the reality of the associations which are reflected. Broadly speaking, the better identified representations appear toward the top and the more uncertain water portrayals toward the bottom of the chart. More specifically, it is possible to regard the representations as divided into four horizontal groupings, expressed by the numerals I to IV. The first, appearing along the top of the chart, are established portrayals of water, either in the Maya or Mexican codices or at Teotihuacán. The representations of the second level show specific correspondences both to the first and third, thereby establishing connections between them. Representations may be placed on the third level as a result of this partial dependence upon the second, but they are likewise assigned to it if they do not fit the specifications of the other levels. The fourth level should be set apart from the others somewhat more sharply than spatial considerations permit. It is comprised of representations showing objects whose nature as paraphernalia or ornament is pronounced, plus a number of occurrences of the fang-tongue-water (?) motif. In general, then, levels I to III represent the "nucleus" and level IV the "fringe" discussed in Appendix B. While the examples in level I are of course the best identified of the nuclear portrayals shown in the chart, it does not necessarily follow that all representations in level II are more certainly water than any in level III. Nevertheless, where possible, the attempt has been made to keep the more probable representations relatively close to the top, assigning the less securely identified designs to lower positions.

On the basis of their apparent conceptual relationships, i. e., of the specific complexes in which the supposed streams of water appear, closely knit subgroups are shown passing vertically through the various levels. Interconnections of a conceptual sort between these subcomplexes are shown by other lines, usually diagonal although more rarely horizontal. The nature of these relationships cannot well be expressed by the chart; cross reference to the text is necessary.

Artistic connections are expressed in two different ways. The type of the representation—columnar stream, divided stream, or fang-tongue-water (?) motif—is shown, respectively, by the use of solid, broken, and dotted lines to box in an entry. Representations not fitting any of these categories are indicated by a still different convention (see key to fig. 16 for the appropriate symbols). In addition, certain specific artistic resemblances are indicated by dashed lines which pass down from the first level. This device is used only sparingly, but the connections which it indicates are of great significance.

The occurrence of any of the glyphs that comprise the yax-kan-completion (zero) complex is indicated by the use of double outlines around the appropriate entry.

Not all of the representations which have been tabulated or discussed are included in figure 16, although the absences are infrequent. The most important single omission would seem to be from Finca Encanto (Entry 31, fig. 20, *d*). The failure of this representation to appear reflects its apparent lack of important conceptual ties. Nevertheless, the close artistic resemblances with figures 20, *c*, *e*, make it highly regarded as a portrayal of water. Certain Piedras Negras representations which would seem to be of considerably less importance are also missing from the chart (Entries 38, 39).

Tlalocs at Copán and Yaxchilan, appearing in the lower left-hand corner of figure 16, are not shown to have direct connections with representations on level I. Nevertheless, space permitting, representations which seemingly depict water from the mouths of Tlalocs at Teotihuacán could have been introduced as a precedent in level I and connected to them.

The somewhat distinct nature of the complexes involving container and jaguar, as set apart from the other representations, is not only recognized in figure 16 but actually receives undue emphasis. To be sure, resemblances of Zoomorph P to Stelae 6 and 7, Yaxchilan, and 11, Piedras Negras, are indicated (divided streams and the same glyph complex). In addition, however, the specific resemblance of a water pourer on Zoomorph P to a water spitter on Stela C at the same site warrants attention (figs. 20, *b*, 22, *b*). This is just one of a large number of reinforcing links which, unfortunately, had to be omitted from the chart.

The prominent position of the sky monster at Palenque and Piedras Negras is, at any rate, well shown. It is the rear head of the monster which takes on special significance in the subcomplex dominated by portrayals in the Temple of the Cross, Palenque. On the other hand, it is the "Serpent bird," characteristically perched at the middle of the monster's serpentine body, which receives special elaboration in Entry 62, from Quintana Roo. And in both cases, supporting evidence from additional sources is particularly impressive.

The method of identifying the representations symbolized by each of the small boxes varies somewhat. If the portrayal occurs on a stela or zoomorph, the number or letter of that monument is given. "L" may be introduced to show a lintel. In other cases, where parentheses occur, the entry number replaces that of the monument. Names of structures are not given, except in the case of the Temple of the Cross at Palenque, where the name is short and the portrayals are of such key importance as to warrant this somewhat differential treatment.

The following abbreviations are used to refer to the site or provenience of specimens:

Bon.	(Bonampak).	Pal.	(Palenque).
Borg.	(Borgian Codex).	P. N.	(Piedras Negras).
Chal.	(Chalchuapa zone, El Salvador).	Q. Roo	(Quintana Roo).
		Quir.	(Quirigua).
Dres.	(Dresden Codex).	Salv.	(Nexapa, El Salvador).
Jon.	(Jonuta).	Teot.	(Teotihuacán).
Liv.	(Livingstone, Guatemala).	Uax.	(Uaxactun).
Mad.	(Madrid Codex).	Yall.	(Yalloch).
		Yax.	(Yaxchilan).

Figure 16 makes no implications whatsoever about the historical development of the various motifs.

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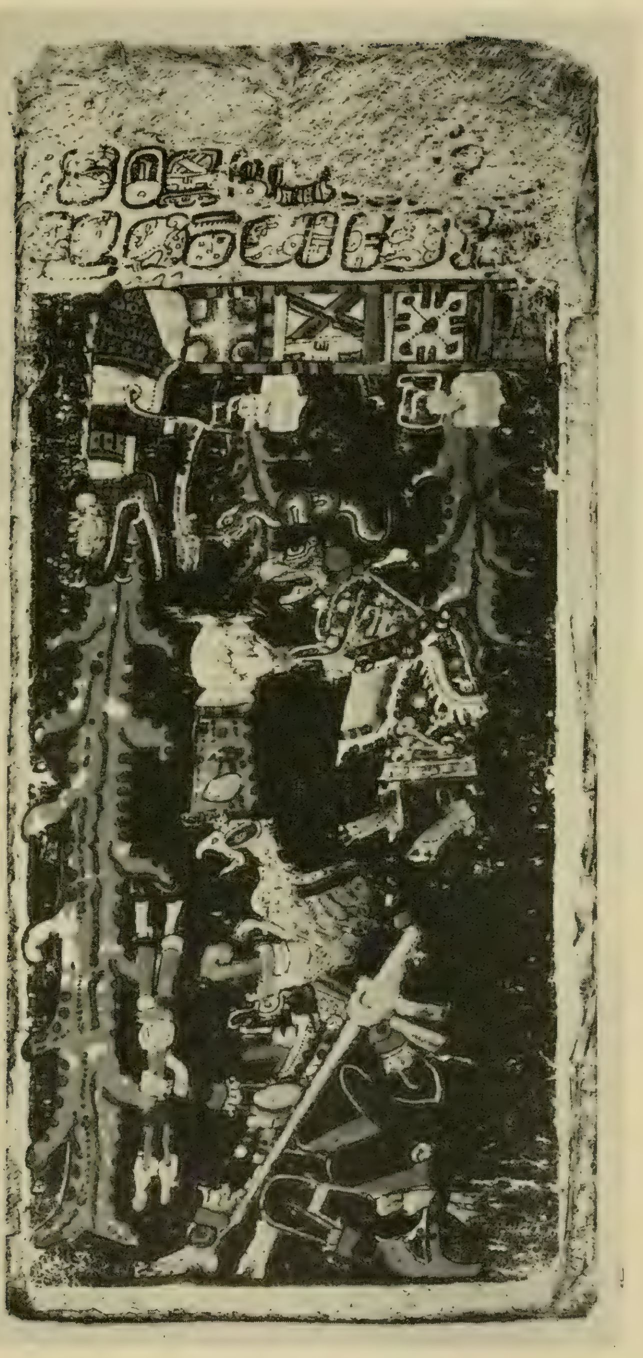

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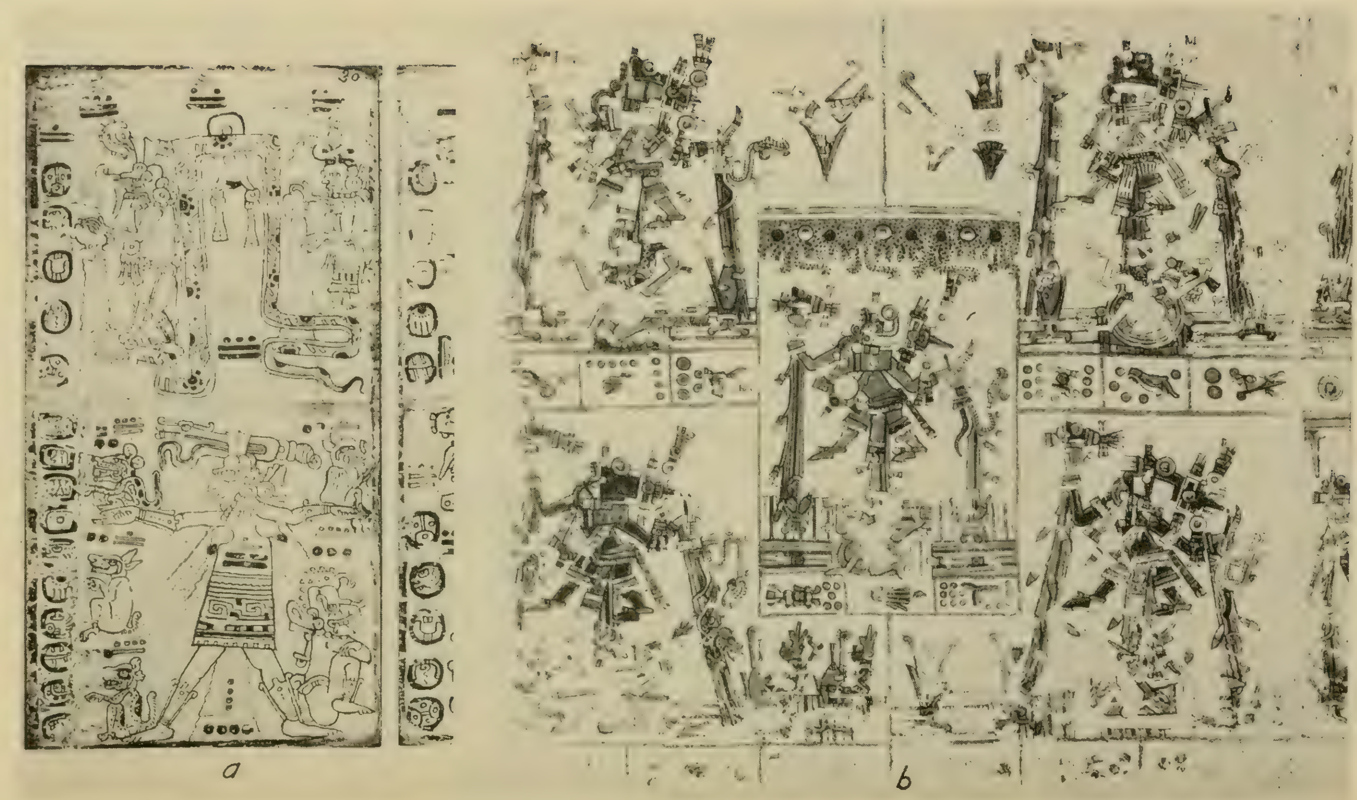
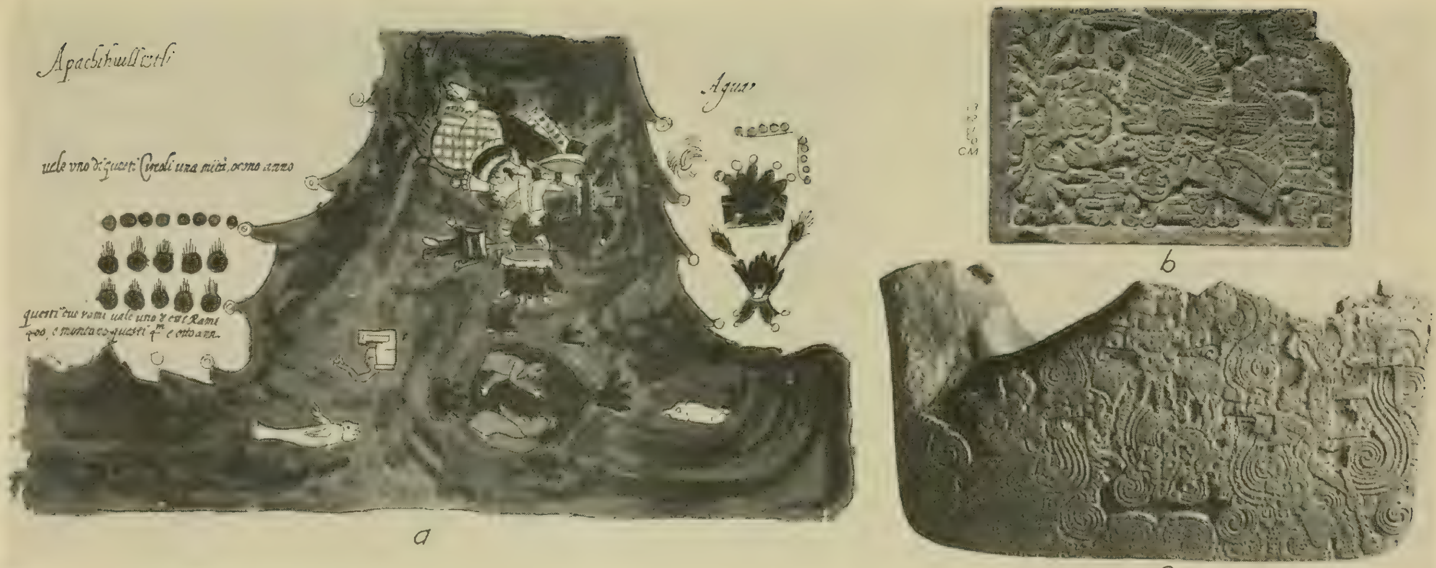
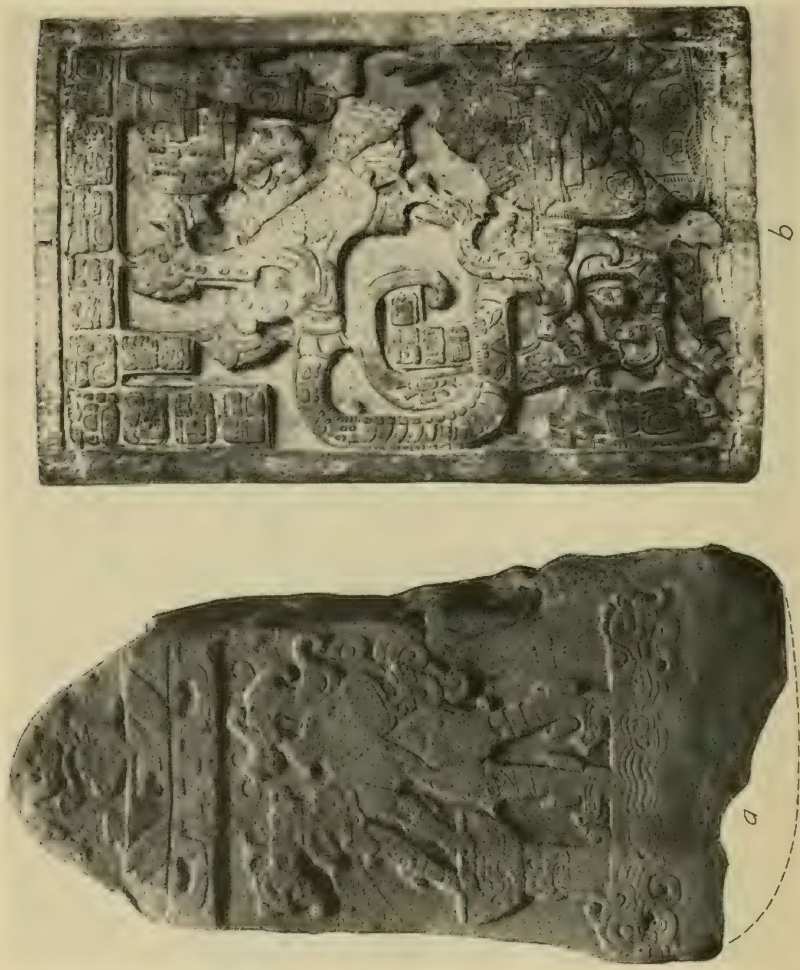


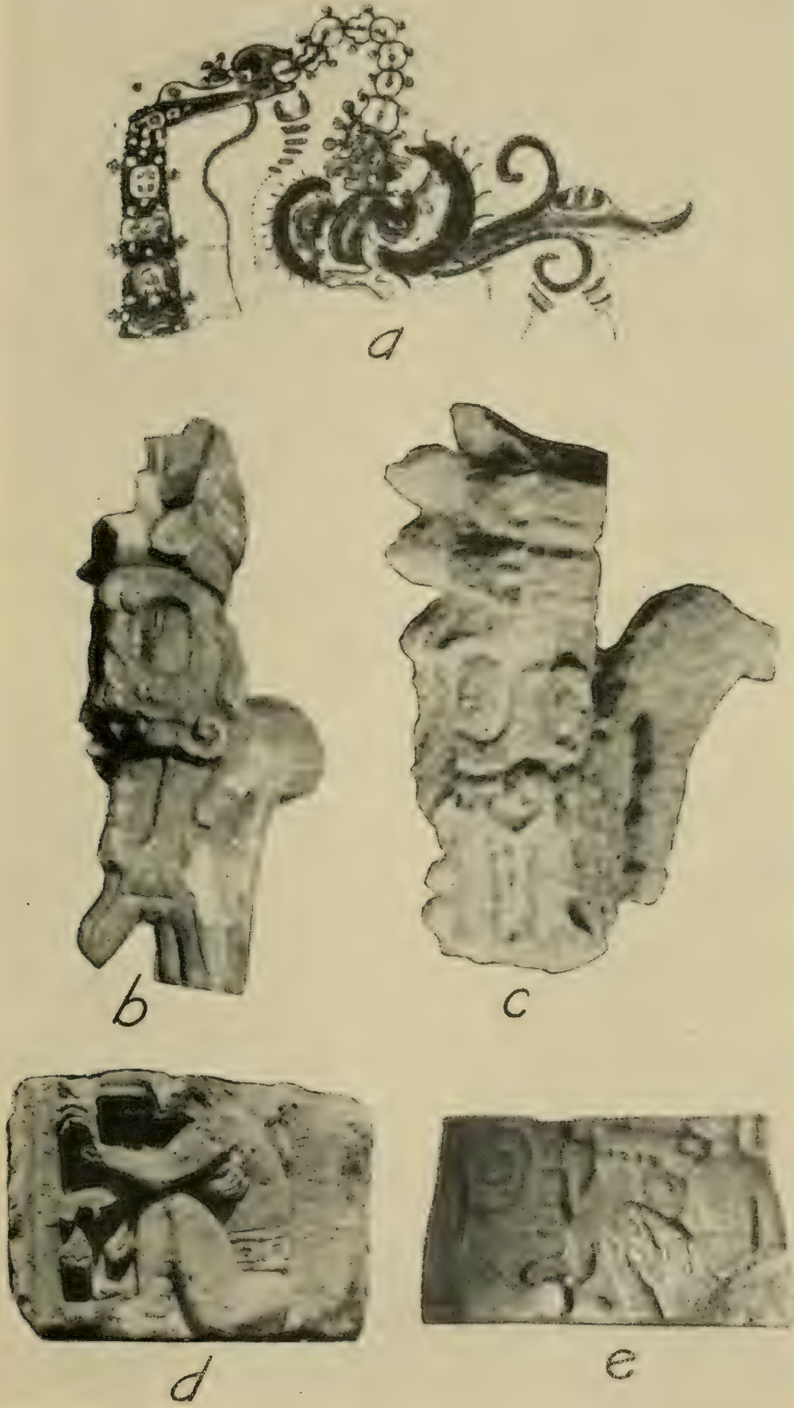
a, Madrid Codex, page 30. *b*, Borgian Codex, page 28.



a, Rios Codex, page 4. *b*, Aztec sculpture (Entry 1). *c*, Tres Zapotes, Monument C (Entry 21).



a, Izapa, Stela 1 (Entry 16). *b*, Yaxchilan, Lintel 25 (Entry 55).



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